

# COMPUTER WORLD

THE NEWSWEEKLY FOR THE COMPUTER COMMUNITY

A Newspaper

Second-class postage paid at Framingham, Mass. and additional mailing offices ©1983 by CW Communications, Inc.

year

September 5, 1983

Vol. XVII, No. 36

## End Time Months, NCR Must Pay Damages to User

By Bill Loberis  
CW Staff

BOSTON — A court-appointed arbitrator has found NCR Corp. guilty of breach of contract and misrepresentation and has ordered the company to pay a user nearly \$500,000 in damages and fees.

The settlement marked the second time in two months and the third time in the last year that the Dayton, Ohio, mainframer has been found to have misrepresented the capabilities of one of its systems to users and then ordered to pay damages. In the recent action, Judge Jacob Lewitow of the American Arbitration Association found that NCR fraudulently induced Winthrop Community Hospital, Inc. of Winthrop, Mass., to buy an NCR 8200 minicomputer supporting the Interactive Healthcare Information System financial package. Lewitow also ruled that NCR was guilty of willfully violating Massachusetts consumer protection laws and, further, had breached the obligations set forth in the so-called Universal Agreement it signed with Winthrop.

To be finalized, the double damage award — totaling \$484,814 — must be confirmed in U.S. District Court, where the suit originated a year ago, attorneys for Winthrop said. In its complaint, Winthrop had asked for damages totaling \$3 million.

(Continued on Page 2)

## AT&T Tells FCC It Will Hold Line On CPE Rentals

By Phil Hirsch  
CW Washington Bureau

WASHINGTON, D.C. — AT&T late last month told the Federal Communications Commission it would guarantee the rental prices of its already-installed business terminals until they are offered for sale.

However, users and others remain unhappy last week. They complained that the phone company's "price predictability" program will still permit substantial price increases.

The pricing issue has arisen because of both the FCC's Second Computer Inquiry Decision and the settlement negotiated in the U.S. vs. AT&T antitrust suit. The former debarred terminals, officially known as customer premises equipment; the latter requires the Bell operating companies that will be dissolved Jan.

(Continued on Page 4)



Photo Courtesy of Data General Corp.

With its high-tech "mystery keel" and computer-designed hull slicing through waters off Newport, R.I., *Australia II* buried its competition in early America's Cup trials. To get behind the computerization of the Cup, see stories and other photos on Pages 6 and 7.

## Inside

One of the first users of Natural/Vsam thinks it has the best of two programming worlds. Page 5.

Despite stepped-up production, IBM still can't make enough Personal Computers. Page 13.

That's not surprising: at the recent IBM PC Fair, the president of IBM's Entry Systems Group said the micro "has gone beyond anything we ever expected." Page 15.

Designing a software system independent of its data or the computer on which it runs was the problem faced by Securities Information Services Ltd. Writing the software system in a subset of a standard programming language was part of the solution. Page 35.

Can, Inc.'s enhanced System 55 voice/data PBX halt the erosion of Western Electric's PBX market share? And at the same time protect the Bell system from interconnect competition and launch AT&T into office automation? Perhaps Page 53.

A 64-bit multiprocessor system that can be configured to rival the performance of number-crunching supercomputers has been introduced by Elasi International. Page 63.

Although the number of installed stand-alone word processors presently stands at less than 1 million, that figure will more than double by 1987. Page 73.

Federal guidelines that allow agencies to contract out for data processing could mean billions of dollars for commercial DP services firms. However, the guidelines could spell trouble for federal DP workers. Page 75.

## IRS Plan To Identify Tax Cheats Draws Fire

By Jake Kirchner

CW Washington Bureau  
WASHINGTON, D.C. — In an effort to identify people who fail to file tax returns, the Internal Revenue Service will soon begin matching its computer files against commercially available lists of names, addresses and incomes of U.S. citizens.

The IRS is planning to test this concept starting early next year in six of its 60 district offices. It is currently seeking bids for lists from private firms that estimate income from such sources as U.S. Bureau of the Census data, vehicle registration files and property assessment records. These would be matched against the IRS master file of taxpayers to see if those who have not filed can be identified, according to the agency.

The plan has raised concern among privacy advocates who fear that the computer method, while not illegal, may dangerously increase IRS capabilities and put citizens in jeopardy of government investigation solely because of unverified lifestyle data supplied by third parties.

An IRS spokesman, however, said, "I want to emphasize that this is publicly available information." He noted that it is part of the agency's job to track down tax cheats.

In 1981, the spokesman said, an estimated 3.1 million people who owed the government money failed to file tax returns. The loss to the U.S. Treasury for that year was put at approximately \$3 billion.

The commercial demographic computer tapes to be used are developed primarily for marketing purposes and list residents by address.

(Continued on Page 4)

## To Survive '80s Skill Shakeout

## Labor Experts Tag 'Job Creation' as Key

By Patricia Keefe

CW Staff

"Job creation" — not "job retraining" — is the key phrase for unions and workers who want to survive the skill shakeout of the '80s caused by high technology.

That was the consensus that emerged one week before Labor Day from interviews with labor experts, researchers, union officials and corporate spokesmen. The interviews produced agreement on these issues:

- Technology is causing, and will continue to cause, some jobs to disappear. This is forcing unions to

shift their priorities to job security and retraining programs. It is also forcing unions to grapple with new issues, while at the same time diminishing their strongest bargaining chip — the supply of labor.

- Job creation has to be a top priority because advances in the automated factory will eliminate more jobs than they will create. In 1965, blue-collar workers comprised 42% of the work force; in 1982, that share had dropped to 31%; according to one labor expert.

- Retraining efforts need to be revamped. Many training programs

are preparing workers with obsolete skills for disappearing jobs. Also, experts agree that it is becoming important to provide employed as well as unemployed workers with access to retraining programs.

- The responsibility for shaping the work opportunities of tomorrow must be shared by labor, management and government. Several labor experts suggested that the present state of the economy, combined with the trend toward automated factories, has created an unemployment problem so severe that a maximum of

(Continued on Page 8)



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Well, the first thing that would happen is that more than three-quarters of the nation's major data processors would suddenly find themselves out of sorts. And probably out of business, too - since sorts represent such a large part of the DP load.

**HERE'S WHY:** Back in 1972, SyncSort was the underwhelming favorite of about 2% of America's IBM computer users. Today, it's the overwhelming choice of more than 75%, according to the latest IDC sort survey.

**THE REASONS:** In the past ten years, SyncSort has pioneered virtually every advance in sort technology. Many of these breakthroughs are now patented.

As a result of the "sort gap" that's been created, IBM sort programs can simply no longer compete with SyncSort in performance, productivity, or service.

This is now true in all three major systems - OS, DOS and CMS. SyncSort DOS, introduced in 1978, proved to be an idea whose time had come. It was the perfect sort program for DOS/VS(E) and the new 4300s, with their fixed-block architecture and VSAM-type of data.

Then last year we pulled off another coup by introducing SyncSort CMS at exactly the time when VM/CMS systems were spreading like a prairie fire.

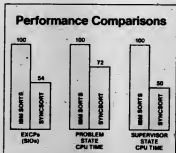
Today, the three versions of SyncSort have over 8,500 users worldwide. That success is based on three areas of supremacy.

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# IRS Plan to Nab Tax Cheats Comes Under Fire

(Continued from Page 1)

and income. IRS files are based on Social Security numbers, so one purpose of the test will be to show if the match can produce enough names of tax return nonfilers to make the match cost-effective.

"We're looking at basically self-employed people" — those persons whose failure to file tax returns does not show up when the IRS matches its master file against the W2 forms employers file on employee income, the IRS spokesman said. He added that the test will be directed at higher income areas; persons who do not have to file tax returns because of low income will not be identified.

Although plans for following up on the test are not complete, the agency observed that its existing method to send a letter requesting nonfilers to file a return or inform the agency why they are not required to do so. Failure to respond can result in a field investigation.

## 'It Offends Me,' Says Lawyer

PALO ALTO, Calif. — One person who worries that the latest Internal Revenue Service matching project may set a bad precedent is Susan Nycum. Nycum, an attorney here who specializes in computer-related legal matters, was a member of a special National Academy of Sciences panel that in 1980 warned the IRS about possible privacy threats from increased agency computer resources and activities.

That panel cited government "policymakers' uncertainties about the use of computer technology to tighten the hand of government. For the IRS it would mean ever-increasing power to monitor taxpayer behavior."

"Perhaps it is proper that the IRS must struggle disproportionately hard to apprehend tax evaders in order to avoid tightening things so completely for all honest taxpayers that the system would resemble the Big Brotherism of [George] Orwell's 1984," the panel's report stated.

Because of those concerns, Congress has very carefully scrutinized IRS computer plans. But by going to outside sources for the computerized information for

this project, Nycum said last week, the agency "may be doing directly what it is not allowed to do directly. That offends me."

### Could Lead to Troublesome Scenarios

Although the IRS test may not be too objectionable in itself, she said, this kind of computer matching, if carried further, could lead to "a lot of scenarios that would be very, very troublesome."

Nycum pointed out that people give information to the U.S. Bureau of the Census, tax assessors and vehicle registrars knowing that information might be used for other, commercial uses. But use of that information for IRS investigations "is a real stretch of the imagination," Nycum said.

"That's the part that really offends me," she said. "I ought to have an expectation about the use of the information I provide." She pointed out that the 1974 Privacy Act restricts matching unrelated government files, but no law regulating computer matches between government and nongovernment files exists.

# AT&T Says It Will Guarantee CPE Rental Fees

(Continued from Page 1)

1 to transfer their already installed ("embedded") CPE base to AT&T Information Systems, Inc. (formerly known as American Bell, Inc.).

The FCC has tentatively approved a transfer plan proposed by AT&T, but critics contend the plan will enable AT&T to reap land-office profits,

force many users to pay more than they should for embedded terminals and make it unnecessarily expensive to change suppliers.

In addition, the critics point out that the sale price of each terminal will be based on the average net book value (original cost less depreciation) of the class of equipment to

which it belongs. However, since depreciation rates can vary greatly — not only among terminals assigned to the same class, but also for the same terminal when sold within different states — and since some terminals are in greater demand than others, this scheme allegedly will force some purchasers to pay more than they should and in effect subsidize other purchasers.

The critics are also suspicious of the "transaction cost" that AT&T wants to include in the sale price of each embedded terminal. That cost was designed to cover the administrative, warranty and marketing expenses associated with preparing the equipment for sale.

### AT&T's Response

In its latest set of comments to the FCC, filed Aug. 22, AT&T responded to these criticisms by pointing out that "consumers can purchase CPE through any number of national chains," and that "for business customers, there are more than 40... manufacturers or sole distributors of PBX (private branch exchange) and key equipment." It is, therefore, "anomalous" to speak of "disaggregated" pricing of CPE.

In addition, according to the phone company, such pricing poses "administrative complexities that would tax available resources beyond the breaking point." And even if the data was gathered, it would be "mid-1985 before the first sales prices could be released." In the interim, "there would be great confusion created by the delay."

The phone company also contended that "the transaction costs of implementing, such a program would be enormous."

Under AT&T's original detairing proposal, provisionally accepted by the FCC, all embedded CPE would be detairing next Jan. 1, but some equipment — PBXs — would not be offered for sale until as long as two years later. The phone company said it would publish rental prices ahead of time for this equipment, but did

not say when. Moreover, the prices would remain in effect for only 18 months. In other words, for the last six months of the two-year transition period (Jan. 1, 1984 until Jan. 1, 1986), prices would not be specified.


In its latest comments to the FCC, AT&T said it will announce rental charges for "all classes of embedded CPE" by Nov. 30 or within 30 days after the FCC approves its detairing plan. Furthermore, "for any product categories not offered for sale by July 1, 1985 [the expiration date of the original price predictability program], monthly charges will remain at then-existing levels until Jan. 1, 1986; thus there can be no gap between price predictability and the offering of CPE for sale."

Attorney Brian Moir, who represents the International Communications Association (ICA), a user's group composed of the nation's largest companies, contends these concessions are largely meaningless. The monthly charges will not be announced until after the FCC approves the underlying plan, he said, which will make it more difficult to get the prices changed.

And while extension of the price predictability program is welcome, AT&T apparently will not announce sales prices for most embedded CPE for some time, so users still will not be able to decide whether to rent or replace their present equipment, an argument the ICA recently brought before the FCC [CW, Aug. 15].

ICA, along with several other participants in the FCC's CPE detairing inquiry, the proceeding officially known as Docket 81-873, wants all embedded business CPE to be detairing over a transition period lasting two or more years. Sales and rental prices would be disclosed at the beginning of this period.

"The issue of whether CPE should be deregulated has been decided" by the FCC, AT&T said in its comments. "Customers should not be denied the benefits of freely competitive CPE offerings by mechanisms that amount to back-door regulation."



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# Best of Both Programming Worlds

## One of Its First Users Lauds 'Natural/Vsam'

By Paul Gillin  
CW Staff

AMARILLO, Texas — DP officials at Pioneer Corp. say they have the best of both programming worlds since the company became one of the first users of Natural/Vsam, a new version of Software AG of North America, Inc.'s Natural fourth-generation language.

The new version of Natural, announced in June [CW, June 13], but officially available last week, extends Natural's capabilities for the first time beyond the realm of Software AG's Adabas data base management system (DBMS). It will allow Pioneer's DP department to continue converting nearly all its programming from PL/I to Natural, according to Cleburne Fritz, manager of technical services. More than 80% of the programming at Pioneer, a diversified energy firm, is currently done in Natural.

Pioneer's DP department installed Natural/Vsam in May to develop a series of on-line applications that involve extensive use of Vsam files. The projects are being developed using Vsam rather than Adabas files because "there are some files that work better on Vsam, such as batch- or flat-file-oriented or files that don't need a lot of descriptors," Fritz said.

### Consumes CPU Resources

While Adabas offers more options than Vsam for retrieving data, the DBMS consumes a lot of CPU resources, he said. Vsam allows the user to bypass file definitions and speed retrieval.

The firm became a beta test site to ensure continuity in its programming effort. "Our programmers are already learning Natural, and this way no retraining is involved," he said. "There are a lot of other languages that hit Vsam files, but with Natural's capability to do interactive development, it made sense to put Natural on the Vsam side."

To compare Natural against PL/I on Vsam files, the department ran a test to convert the same application from batch to on-line using the same programmers and both languages, according to Ken Story, manager of systems development. With PL/I, the project took nearly two months to complete. Story said. Under Natural, the application was running after one week.

"I'm not saying those figures are typical," Story said, "but we get things done at least three to four times as fast using Natural."

With the addition of Natural/Vsam, Pioneer "is not developing any PL/I-based interactive systems," Story said. While Natural falls short of PL/I in some categories, notably array processing, "we haven't found too many applications that can't be handled in Natural."

Fourth-generation programming is particularly attractive to the firm's crop of young programmers, Story noted. "You can code the program, test interactively and get immediate results," he said. "That's the world [the young programmers] like to live in. Those who are becoming very fluent in Natural don't even want to go back to PL/I."

By programming in a high-level language, "our problem has gone from programming to design," Fritz said. "Before, we had one analyst who kept several programmers busy. Now our programmers are waiting on the analysts."

The customer information system being developed will eventually free 36 Pioneer facilities throughout western Texas on-line for inquiry and update. The user interface will be developed in-house, "but the potential is there to let the users do their own queries," using Supernatural, a user-friendly fourth-generation language that Software AG will

release early next year, Fritz said.

Pioneer is now using Natural/Vsam principally for applications requiring few descriptors. For files with multiple indexed fields, the department uses its own indexing method. Natural on Adabas will continue to be used for applications requiring greater flexibility.

"The performance has been excellent," Fritz said. "The development people have been surprised because Adabas requires quite a lot of CPU resources, while with Vsam you can get very quickly at the data without worrying about all those indexes. On the other hand, we don't have all that flexibility."

# THE YOURSOUR CURRICULUM FOR OCTOBER/NOVEMBER & DECEMBER

## STRUCTURED TECHNIQUES

MANAGED STRUCTURED  
TECHNIQUES

13 Days

Oct 11-23 Houston

Oct 11-23 New York

Oct 11-23 San Francisco

Oct 11-23 Seattle

Oct 11-23 Phoenix

Oct 11-23 Dallas

Oct 11-23 Chicago

Oct 11-23 Washington DC

Oct 11-23 Denver

Oct 11-23 Portland

Oct 11-23 San Jose

Oct 11-23 Los Angeles

Oct 11-23 Miami

Oct 11-23 Atlanta

Oct 11-23 New Orleans

Oct 11-23 San Diego

Oct 11-23 Salt Lake City

Oct 11-23 Las Vegas

Oct 11-23 Honolulu

Oct 11-23 Anchorage

Oct 11-23 Fairbanks

Oct 11-23 Juneau

Oct 11-23 Sitka

Oct 11-23 Kodiak

Oct 11-23 Wrangell

Oct 11-23 Haines

Oct 11-23 Chitina

Oct 11-23 Bettendorf

Oct 11-23 Des Moines

Oct 11-23 Ames

Oct 11-23 Johnston

Oct 11-23 Lincoln

Oct 11-23 Omaha

Oct 11-23 St. Louis

Oct 11-23 Kansas City

Oct 11-23 Denver

Oct 11-23 Salt Lake City

Oct 11-23 Las Vegas

Oct 11-23 Phoenix

Oct 11-23 San Diego

## STRUCTURED DESIGN

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TECHNIQUES

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Oct 11-23 Seattle

Oct 11-23 Phoenix

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Oct 11-23 Denver

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## Corrections

In "Execution Links Users' Mircos to Data Center" [CW, Aug. 29], the vendor of the Inquire data base management system was incorrectly identified. The correct vendor is Infodata Systems, Inc.

Nippon Electric Co.'s (NEC) word processing package called PCword [CW, Aug. 22] is not intended for the IBM Personal Computer, but for NEC's own PC 8800.

For information, course outlines or to register for a course, call toll-free 800-223-2452. Youdon New York and Canada 1133 Ave. of the Americas, N.Y. N.Y. 10020 (212) 269-3828. Youdon West 1001 Energy Ave., Suite 100, San Bruno, CA 94066 (415) 280-2200. Youdon Washington D.C. 2927 Jones Branch Dr., Suite 400, McLean, Virginia 22102 (703) 794-0437. Youdon Perth 100/105 Rutherford, London WC7E 7BN England (071) 837-2382.

# YOU DON



Beating upwind with sails full, *Defender* holds a slim lead over *Liberty* in recent trials to decide which U.S. boat will defend the America's Cup.

On Photo by B. Laberis



Running ahead of a stiff wind beneath threatening skies, Britain's *Victory* shakes out the bugs in sea trials. Trailing behind is *Victory's* tender, carrying a Perq Systems, Inc. graphics workstation that monitors the racer's performance.

Photo Courtesy of Perq Systems, Inc.

## DP Analysis, Design Now Part of Sail-Making Art

By Bill Laberis

CW Staff

**MARBLEHEAD, Mass.** — Jack Kleene walked along the racks of sailcloth at Doyle Sailmakers here, passing the rolls of crinkly nylon and dacron and stopping at a bin marked "Kevlar."

The material looked and felt more like patent leather than traditional sailcloth and was no more stretchable. Racing sail manufacturers like Doyle have determined precisely where a high-performance sail should be reinforced with Kevlar or other state-of-the-art sailcloths by running home-grown software packages on minis and micros.

"We're just beginning to apply very sophisticated computer analyses from the aircraft industry for example, to sail design and manufacture," said Kleene, a naval architect and Doyle's chief of research and development. "You have to understand that sail making has always been an art. Computers are rapidly changing all that, and the result is better sails."

A typical sail design program performs what Kleene called a finite load analysis on a prototype sail de-

sign. The program essentially chops the sail into several dozen sectional pieces, then applies forces to them corresponding to variations in wind pressure. In a stiff wind, the pressure on a sail can reach 10,000 pounds per square foot.

"The main idea is for the sail to hold its shape while weighing as little as possible," Kleene explained.

As different parts of the sail are subject to different stresses, computer analysis tells sail makers just how much a given sailcloth will be stretched under different sailing conditions and, therefore, what material to use. A typical mainsail on a 12-meter racer will have over 100 individual pieces of sailcloth and as many as four different types of cloth.

"When you consider the number of variables in sail design today, you realize how much you need a computer to consider all the options," Kleene said. "An experienced sail maker knows basically what shape sail he wants, and the computer tells him how to get it."

Designers of racing hulls, too, have found that intuition is increasingly being challenged by state-of-the-art computer design.

"We've just scratched the surface in terms of using our computer resources as a design tool for racing hulls and keels," said David Pedrick, naval architect, designer of *Defender* and owner of Pedrick Yacht Designs of Newport, R.I. "It allows us to explore many, many more design alternatives than could be accomplished otherwise and helps us make the most out of expensive tank tests."

But Pedrick thinks "the really big breakthroughs in computer design are coming with three-dimensional graphics packages," he continued. "Like in other areas, computers will help us expand our capabilities and do so economically."

Pedrick is one of the pioneers of computer-aided design (CAD) of racing yachts. While at the venerable yacht design firm of Sparkman & Stephens, Inc. in 1973, Pedrick was chief designer of two-time Cup winner *Courageous*, still a Cup contender



On Photo by B. Laberis

Hauled out of the water between races, *Australia II* at all times is partially shrouded in canvas and wood to obscure her mystery keel, believed to have a novel design that is helping the boat demolish its competitors in trial races.

at this writing. And with his design of *Defender*, which was eliminated from the competition last week, Pedrick has taken computerized hull design a big step further.

Utilizing equipment that includes a Prime Computer, Inc. 750 minicomputer and Nicolet Zeta Corp. drum plotter, Pedrick ran the Velocity Prediction Program (VPP), developed at MIT, to analyze the hydrodynamics of various theoretical hull and keel designs. He also enlisted the aid of friends in the aerospace industry, who employed many of the same CAD principles of aircraft to study the movement of a hull through water.

VPP is being continuously refined, Pedrick noted, adding that its value in the yacht design process is already great.

"There's no doubt computers are allowing us to push more engineering into racing yachts," he said. "Intuitively, we know what the best fundamental design is just from experience. But the refinements we get with computer analysis can give that

extra bit of speed needed to win this kind of competition."

"And let's face it," Pedrick added, "with everyone else using the technology, what choice does any contender have?"

### Self-Study Course Covers Data Files

**RYE, N.Y.** — Atré International Consultants, Inc. has announced an interactive self-study course titled "Introduction to Data Files for End-Users."

The course provides the basic concepts necessary for individuals with little or no data processing background to define and utilize computerized files, Atré said. It was also developed for DP professionals who are preparing for more advanced topics in data base management systems.

A perpetual license for the course, which runs on IBM's Interactive Instructional System, costs \$1,450. Atré can be reached through P.O. Box 727, Rye, N.Y. 10580.

### Plea Changed In Olsen Plot

**BOSTON** — A U.S. Army sergeant switched his plea from innocent to guilty last week, admitting he tried to extort \$1.25 million from Digital Equipment Corp. President Kenneth Olsen.

Marc E. McDonnell, 27, of Ft. Devens, Mass., was arrested in June and charged with threatening to kill Olsen and his family as part of the extortion attempt (CW, July 4). A demolition expert, McDonnell sent Olsen threatening letters and blew up two telephone poles near Olsen's home in a show of force prior to his arrest. The prosecution has maintained.

McDonnell will be sentenced in U.S. District Court on Sept. 26. He faces a maximum penalty of 25 years in prison and a \$5,000 fine.

# 'Computer Crews' Sail With Cup Contenders

By Bill Laberis  
CW Staff

NEWPORT, R.I. — Scarlet-hulled *Liberty* bit through the Atlantic chop like a shark after bait fish, fending off the upwind challenge of *Defender* as both boats tacked toward the course marker two miles distant.

Below deck, *Liberty's* navigator scanned the readout displayed on the boat's Hewlett-Packard Co. 9825 microcomputer, reporting his findings to skipper Dennis Connor at the helm. Connor, seeking his second U.S. defense of the America's Cup, barked an order, and a crewman ever so slightly adjusted *Liberty's* mainsail as the sleek 12-meter yacht inched further ahead of *Defender*.

Welcome to the continuing computerization of the America's Cup, where computer-aided design and navigation techniques are transforming the art of sail and hull design, as well as helmsmanship, into feats of engineering.

## High Tech Under Sail

When the finals in the 133-year-old event get under way offshore here Tuesday, Sept. 13, the defending American boat and foreign challenger will each be equipped with about \$30,000 worth of high-tech instrumentation, including about \$10,000 worth of on-board computers and software. Shore-side mini-computers, used during the summer-long elimination trials to process and analyze data gathered by on-board micros, will add another \$30,000 plus to the contending boats' arsenal.

The boats' gleaming hulls, measuring about 60 feet from stern to stern, will represent the product of countless hours of computer-aided design work, which is increasingly becoming the key to experimenting efficiently with different hull designs. Each boat will carry over \$500,000 worth of sails, the design, materials and construction of which have all been neatly monitored and controlled by computers running intricate aerodynamics and stress programs.

But despite the extent to which boat designers, sail makers and skippers have pressed computers into service in the quest for the Cup this year, most racing enthusiasts agree that the computerization of the race is at the bottom of the learning curve, with the biggest breakthroughs yet to come.

The on-board computer systems, used now by every serious Cup contender, are generally variations on a theme set down by Ockum Marine of Darien, Conn. The Ockum system is a \$10,000 package anchored by one of two HP micros and designed specifically to integrate and analyze the information from the boat's many sensing devices.

In particular, the system digitizes and digests the analog signals delineating both the true and apparent wind speed, wind direction, boat speed, the angle the boat is plying through the water and five or so other measurements. This information serves two purposes. First, it is used during races to help the helmsman determine his exact position with respect to the course markers, as well as to monitor the performance of his

boat. With position and race performance updates available every few minutes when instruments are manually analyzed, the skipper is less prone to make time-consuming errors.

Secondly, information gathered during a race is stored on floppy disk, then transferred to minicomputers either on shore or in tender boats. This information is analyzed using more sophisticated Fortran programs in hopes of improving the boat's performance next time out.

The British challenger, *Victory*, sends signals to a tender boat which has a Perq Systems, Inc. graphics workstation aboard to analyze *Victory's* progress. *Australia II*, the most formidable challenge to U.S. domi-

nance of the event in decades, has its performance monitored by a Data General Corp. Micronova MP/100 micro on board a tender, and more thoroughly by a DG Nova 4 minicomputer on shore.

But it is *Australia II's* high-tech mystery keel that has caused the greatest air in the races this year. Completely sheathed by canvas and a wooden sleeve when hauled out of the water, the keel is believed to incorporate a state-of-the-art design to maximize speed when sailing into the wind.

As instrumentation improves and more powerful computers and programs are available, might the skipper and 11-member crew some day be replaced, just like workers on an

assembly line?

"Not a chance," said Lexi Gahagan, who crewed on *Conqragous* during 1980's successful Cup defense and who now works for Doyle Sailmakers in Marblehead, Mass. "No computer can sort through the variables to tell you the best move in a tacking duel, and no instrument can predict what the wind is doing a couple hundred yards ahead like an experienced helmsman."

"The computer enables the skipper to use more sophisticated instruments," Gahagan continued. "When you figure that a typical Cup race [24 miles] is decided by 30 seconds or less, it's the best skipper and crew that's usually going to make the difference."



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# Labor Experts Call for Job Creation

(Continued from Page 1)  
three years to solve this problem is considered reasonable.

Technology in the work place has been around since the 1950s, when demand for goods created jobs to replace those that were lost due to automation, according to Tom Weekley, coordinator of the Skilled Trades' Department of the United Automobile Workers in Detroit.

Within the last decade, however, the advent of cheaper, multifunctional computers and intelligent robots, combined with the current world economy and competitive marketplace, has fueled the race toward the factory of the future, experts agreed. Of primary importance here is that management not overlook the human implications of technology, stressed Joel D. Goldhar, dean of the School of Administration at the Illinois Institute of Technology in Chicago.

Technology is not only changing the kinds of jobs available and the types of workers needed, it is changing the location of work, observed Prof. Edward Blakely of the city and regional planning department at the University of California at Berkeley. Blakely cited four other areas of change created by technology: the kinds of work a company can attempt, the nature of available work from hand work to thinking work, new work rules and increased management control of work and employees.

These changes reach beyond blue-collar workers, Blakely and Goldhar agreed. Technology also has the potential to replace knowledge workers — for example, secretaries and paralegals — either by completely automating their functions or increasing the amount of work produced by fewer workers.

Increased productivity, the buzzwords of the '80s, can be translated into a need for fewer workers, Blakely said. "Look at Lexis [a legal research service]. How many paralegals has it replaced?" Goldhar asked.

Moreover, these changes have equipped companies with the capability to ship data and/or work to foreign locations, permanently closing some U.S. factories. In other cases where work is automated, "de-skilled workers" do little more than watch the machinery while they themselves are watched by other forms of technology, Blakely said. All this has the effect of frightening workers and confusing unions (see story on Page 3).

Unions have always provided what was an essential ingredient to

the building of corporate wealth — labor. Suddenly, with the advent of completely automated factories, such as General Electric Co.'s Erie, Pa., locomotive factory, labor's importance has been diminished, the labor experts interviewed last week pointed out. And, as the recent strike against AT&T by members of three unions revealed, management in heavily automated industries has the ability to minimize the cost of work stoppages.

Automation also reduces the potential for other disruptions of the work cycle via preprogrammed quality control that reduces uncertainty and increases reliability, which results in a more competitive product, Goldhar said. "Every time unions strike, they are [inadvertently] reinforcing the advantages of automation," he added.

One result is a shift in the balance of power toward corporate management, according to some labor experts. However, union and corporate officials said they can see no evidence of any power shift in management's favor.

## 'Bill of Rights' Serves as Guide To Technology

WASHINGTON, D.C. — The International Association of Machinists and Aerospace Workers (IAMAW) is a forerunner in the labor movement's bid to come to grips with the introduction of technology into the work place and its potentially negative impact on workers.

In November 1982, representatives of the IAMAW ratified a 10-point "Technology Bill of Rights" at the union's Electronics and Technology Conference in Seattle. The bill of rights has been distributed to union locals as a guide to be used during contract negotiations.

The union has already negotiated one government contract using the guidelines and plans to incorporate the "right" in contracts that it will shortly be negotiating with several airlines.

### 'Not Against New Tech'

George Poulin, resident general vice-president of the IAMAW, said "We are the only ones who have [the Technology Bill of Rights], although other unions do have two- or three-point programs." He stressed that unions are "not against new technology," but rather believe that technology should be used to create jobs

consequently, leading to full employment, instead of creating jobs.

Poulin, who is based here, explained that the guidelines were constructed to help "ease the social effects" of technology on workers and requested that:

• Increase profits as a result of labor productivity gains (from using technology) be shared with the workers involved at the local level.

• Any increase in leisure time resulting from increased productivity, such as a shorter workweek, not result in a loss or decrease of income.

• Machinery used to replace workers be taxed the same as a worker's paycheck would be taxed. This would keep a greater burden of taxes from falling on fewer workers and should be offset somewhat by the greater savings business expects to realize from using computers, Poulin said.

• New technology enhance and enlarge the opportunities for workers to expand their knowledge and skills. Displaced workers should not be penalized; they should be compensated and either be retrained to do productive work within the company or be trained to do other work.

• Workers, through their collective bargaining units, have the right to participate in all phases of the development and implementation of technology. "We want to have as much advance notice as possible in order to take care of employees who will be affected by the change," Poulin said.

• Workers monitor control rooms and centers so that they will not be used to set standards such as quotas or higher speeds on production lines without being negotiated first.

• Access be controlled to personnel information, such as work and health records, that are fed into the computer. This is of "prime concern" to the union, Poulin said.

## Travelhost Stops Taking Orders For Hotel Room Videotex Net

DALLAS — Ambitious plans to install a network of videotex terminals in 100,000 hotel rooms by the end of 1983 have given way to reality at Tra-

velhost, Inc.

Citing technical difficulties and "issues of profitability," Travelhost has stopped taking further orders for the portable terminals while it re-evaluates its marketing focus and some technical issues that have arisen since the program was announced in April.

The project was originally targeted to provide services such as airlines schedules, news and stock information, electronic shopping, electronic mail and games to travelers at hotels on the Travelhost system [CW, June 6]. Initial estimates targeted 100,000 terminals in 1983 and up to a half million by the end of 1985.

But with 3,000 terminals installed and 20,000 back-ordered, Travelhost stopped taking orders for new installations in June. Among the technical difficulties encountered were "interfacing with different [private branch exchanges], different antenna strengths, the number of phone lines and different carriers," according to Roger Thrallkill, Travelhost's president. But he said the problems were "minor considerations compared with the issues of profitability to hotels, user acceptance and user friendliness."

"For one thing, we didn't expect so many users to want to use their own terminals," he said. "That brings up the issue of hundreds of terminals with ASCII and other formats" and the problem of making them compatible with the Travelhost network.

Thrallkill said the company's stated goal of 100,000 terminals "was reasonable to reach with a full-blown marketing effort, but they have been subject to change since then." Travelhost is refiguring its sales estimates for this year, but still thinks the goal of 500,000 installations by 1986 "is not out of the question."

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# Technology Seen Reshaping Labor Movement

By Patricia Keefe

Since workers and unions cannot hope to stop the automation of the work place, labor experts believe their best strategy is to work hand-in-hand with management to prepare for the factory of the future.

Technology will "catastrophically" reshape the labor movement itself in terms of the types of workers it will be representing, the actual number of unions and union members," according to George Poulin, the Washington, D.C.-based resident general vice-president of the International Association of Machinists and Aerospace Workers.

In addition, unions will have to face entirely new issues, for example, changes in the physical location of work (the movement of jobs overseas), the diminishing importance of traditional workers, and the creation of new jobs. "Unions were never involved in the creation of labor; their bargaining chip was always the withholding of labor," explained Prof. Edward Blakely of the city and regional planning department at the University of California at Berkeley.

As technology changes the composition of the labor force, unions will have to cope with a new breed of worker — the high-tech worker, whose needs differ greatly from those in the traditional, industrial unions. Blakely said that whereas blue-collar workers in heavy industry were primarily interested in owning a home and job security, high-tech workers not only tend to be better educated, they are more interested in career development rather than job training and career mobility rather than job longevity.

"High-tech workers today do not expect to work in the same field or for the same firm for 20 years," he observed. The "old unionizing tools" will have to be updated if unions hope to tap this growing and largely unrepresented sector of the work force.

Fearful of these changes, worker sabotage of technical equipment is on the rise. "I have seen it here at the university, in my own office," Blakely said.

Sabotage is not new, however; several interviewees recalled the Luddites, who were responsible for destroying new technology during the industrial age in Europe. However, another version of worker "sabotage" can put more force behind a strike if a union can convince the workers who operate or control technical equipment to walk off the job, according to MIT Prof. Harley Shaker.

Although Blakely and other labor experts have accused unions of being slow to respond to worker concerns about technology, several organizations have already begun to formulate concrete strategies designed to integrate the implementation of technology with the protection of worker rights. Some of the strategies advocated by unions, management and other labor observers include:

- Involving workers in every phase of plans to automate various functions (see story on Page 8). This way, "the employer is not the ogre, and unions are not the obstructor,"

Blakely said.

- Giving advance notice to workers who will be displaced by work transfers or technology and providing them with lump-sum payments based on years of service in addition to unemployment compensation.

- Instituting a shorter workweek to spread the available jobs over more people, without resulting in any loss of pay to workers. Also, the increase in leisure time is expected to create more jobs in itself.

- Withholding a certain amount of money per worker per hour to be pooled into a fund for retraining, laid-off or displaced workers, as well as auto workers have agreed to do. As a rule, management is being required to retrain at its expense work-

ers who are displaced by technology for other positions.

- Providing retraining and continuing education programs at the work site to provide greater accessibility for employees, particularly to prepare those facing the obsolescence of their skills or jobs. Another option is to use unemployment insurance as a "reemployment tool" by allowing workers to withdraw education vouchers, Blakely suggested. Tuition reimbursement programs also exist.

All those interviewed agreed that labor and management cannot handle the problem alone. Policy will have to be formed on a national level to deal with displaced workers. Otherwise, the country is "wasting hu-

man resources," Blakely said.

Among the suggested government alternatives were:

- Creating an industrial policy to create and protect "sunrise" industries.

- Shifting existing priorities and resources from welfare to the creation of jobs.
- Protecting displaced workers with portable pension systems, allowing them to take what they have vested with them, and giving them mortgage protection or extensions for the unemployed. "The point is to prevent personal disasters from taking place," Blakely said.

- Granting factory towns the right of first refusal whenever a plant closes and is put up for sale.



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## Datacomm Briefs

### Justice Gives OK to BOCs For Exchange Services On Nontariffed Basis

By Phil Hinch

CW Washington Bureau

WASHINGTON, D.C. — A Bell operating company (BOC) can offer exchange services on a nontariffed basis if those services were previously regulated, the U.S. Department of Justice said late last month. The pronouncement impacts a major proceeding now under way at the Federal Communications Commission.

Under the Second Computer Inquiry decision, AT&T must establish a separate subsidiary if it wants to of-

fer interstate "enhanced" — or computer-based — on-line services. As a result, the phone company established American Bell, Inc., now known as AT&T Information Services, Inc. The separate subsidiary provision also applies to the operating companies prior to their divestiture from AT&T, but whether it also applies to them afterward is the subject of a commission inquiry.

Last April, shortly after the inquiry was launched, the Justice Department said the "separate sub" rule should be imposed on the divested Bell operating companies. Its latest opinion was released in response to a request from attorney Harry Shoshan, former chief counsel of the U.S. House of Representatives tele-

communications subcommittee, who now represents a Portland, Ore., CATV network operator, Cablesystems Pacific.

Cablesystems Pacific, which offers data transmission over an "institutional" CATV network in Portland, became alarmed when Pacific Northwest Bell Telephone Co. said it could offer a competing service on an unregulated basis. According to Shoshan, the phone company argued that providing such a service would not violate the agreement settling the U.S. vs. AT&T antitrust case. Shoshan insisted that the agreement, known officially as the Modified Final Judgment, "contemplates that the Bell operating companies will offer only regulated services."

James Denvir, chief of the AT&T staff within the Justice Department's Antitrust Division, answered that the Modified Final Judgment "is not intended to limit the Bell operating companies . . . to those exchange services that are natural monopolies actually regulated by tariff . . . On the assumption that the services at issue are now regulated exchange telecommunications, the mere fact of their deregulation at some point in the future would not, in our view, prevent the Bell operating companies from offering [them]."

### Justice Wants Others To Offer CSUs, NCTEs

WASHINGTON, D.C. — AT&T and the Bell operating companies should no longer be exclusive suppliers of wideband channel interfaces, the U.S. Department of Justice told the Federal Communications Commission (FCC) late last month.

The statement seems likely to help independent terminal makers defeat an effort by several Bell operating companies to reverse the FCC's decision earlier this year authorizing non-Bell suppliers to provide digital channel service units (CSU) and network channel terminating equipment (NCTE). The interfaces are required to attach data terminals to Dataphone Digital Service (DDS), Terrestrial Digital Circuits Service and other high bit-rate switched and point-to-point offerings of AT&T.

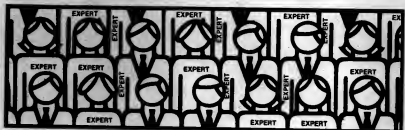
In July, about two months after the FCC decided to let independent suppliers provide CSU and NCTE, the Bell operating companies requested reconsideration of the decision. The Justice Department's comment opposed this request. It said all of the arguments advanced by the operating companies had been considered previously, and "given the commission's prior determination . . . that CSU and CSU-like devices can be connected to DDS in a manner that is privately beneficial without being publicly detrimental, there is no reason to reconsider the policy decision."

### Rochester Tel. Building Net Outside Service Area

ROCHESTER, N.Y. — Construction will begin immediately on the first communications network to be deployed by a telephone operating company beyond its service territory, a spokesman for Rochester Telephone Corp. said last week.

Rochester Telephone expects to begin operating by the end of this year a digital microwave network, which was authorized by the Federal Communications Commission earlier

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## Datacomm Briefs

this month. The network will initially serve Buffalo, Rochester and Syracuse, N.Y. Service will be extended next year to New York City; Stamford, Conn.; Newark, N.J.; Pittsburgh, Pa.; and Cleveland.

Along with digitized voice, the network will provide point-to-point digital data transmission at the same speeds offered by AT&T's Digital Dataphone Service — from 2,400 bit/sec up to 1.5M bit/sec. It will also offer circuit switching, initially at speeds up to 9,600 bit/sec and later to 56K bit/sec.

Packet-switching service is under discussion, the spokesman said.

### Acct Sides With AT&T On Access Charge Issue

WASHINGTON, D.C. — "Ill-conceived... substantially misdirected and premature... a blunderbuss approach" was how a trade association representing the nation's other common carriers characterized pending bills aimed at doing away with the Federal Communications Commission's (FCC) new access charge plan.

The American Council for Competitive Telecommunications (Acct) was once among AT&T's most severe critics, but a statement it issued here earlier this month on the legislation closely parallels the telephone company's views. The Acct maintained that:

● Legislators' fears of massive rate increases after the Bell system is broken

up next January are unfounded because state utility commissions have been disallowing a substantial percentage of telephone company rate increase requests and can be expected to continue doing so. In addition, Acct said, any rate increases allowed will be partly offset by an end to the license contract fees Bell operating companies now pay AT&T for administrative services and access to Bell patents.

● Although the FCC access charge plan will raise residential subscriber rates by \$2/mo, it will be "more than offset by competition-spawned reductions in long-distance and terminal equipment charges for residential users."

● It has never been "demonstrated" that the long-distance subsidization of local-exchange costs helps reduce the costs of residential service and thus promotes universal service. Rather, "there is evidence that the phone companies used the funds to underwrite their competitive equipment and intrastate toll services."

● "Most of the proposed bills... would not target subsidies to truly needy people. There is no assurance that the high-cost phone companies would not misapply the subsidies to their competitive offerings or profits."

Acct also criticized legislation establishing an "autonomous Universal Service Board" to determine how much of a subsidy long-distance carriers will have to pay telephone op-

erating companies. This provision, by allegedly delegating congressional taxing powers, "raises serious constitutional questions."

### AT&T CRT Users Must Pay Service Fees: FCC

WASHINGTON, D.C. — Users of terminals provided by AT&T Information Systems, Inc. must pay "maintenance of service charges," the Federal Communications Commission's Common Carrier Bureau recently ruled.

The charges are levied when an AT&T service technician called in by a user in trouble finds the user's trouble is caused by customer-provided terminal equipment. Since equipment obtained from AT&T Information Systems "unquestionably" is customer-provided, said the bureau, the maintenance of service charges apply.

AT&T has signed contracts with various Bell operating companies under which the operating companies, during a "transition period" of up to 10 months, will service terminal equipment sold and leased by AT&T. Under those contracts, AT&T said, the maintenance of service charges would not be applied.

But the bureau had a different view. It said that unless AT&T Information Systems' customers pay the maintenance of service charges, they will receive an "unreasonable preference," which is explicitly forbidden

under the Communications Act of 1934.

### Comments Due on Proposal To Trim FCC Surcharge

DES MOINES, Iowa — Written comments are due this week concerning an Iowa State Commerce Commission proposal aimed at undercutting the surcharge the Federal Communications Commission (FCC) plans to impose on all telephone customers next January as a result of its access charge decision. Residential users will pay \$2/mo and business users \$6/mo per line.

Iowa utilities regulators, along with those in Idaho, are considering a rule requiring the telephone companies serving their states to provide local-only service to those customers who want it. The state regulators assume that customers subscribing to such local-only service would not have to pay the surcharge because it covers expenses associated with provision of access to the long-distance network.

Under the Iowa proposal, a customer who chose Basic Local Service would be barred from making outgoing toll calls but could receive incoming toll calls.

A hearing to consider the written comments due this week is scheduled for Sept. 9. A spokesman said that a decision on whether to adopt the proposal is likely from the FCC before the end of this year.

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**General  
Sightings**

# Show's Business Slant Draws Professional DPer

By Ed Scannell  
CW Staff

**SAN FRANCISCO** — Data processing professionals, along with a representative sampling of the business community, had ample opportunity to satiate their curiosity about the IBM Personal Computer and its compatibles at the inaugural IBM PC Faire held here recently.

Despite the fact that it was held on a weekend in late August, over 23,000 people attended the three-day show, strolling through 550 booths set up by 326 manufacturers and retailers of IBM and IBM-compatible systems and add-on hardware, software and a variety of communications products.

The show was sponsored by Com-

## CW at PC Faire

puter Faire, Inc., which was recently acquired by Prentice-Hall, Inc.

Unlike many other microcomputer shows, this one was aimed at those wearing blue suits instead of blue jeans.

Organizers said the show's decided business bent was guaranteed by the presence of IBM — which so far has shied away from the home and game markets — and the peaking curiosity about microcomputers evidenced by people from large and medium-size organizations.

Dan Fineberg, a marketing manager at Micro Focus, was glad to see more data processing professionals than unsophisticated users at the show, but he wasn't surprised by the development.

"Since IBM has such credibility with DP departments, the [Personal Computer] would be a logical choice for most of these people. IBM is blazing a [microcomputer] trail into larger organizations, and others will follow," he predicted.

Ironically, one of the reasons so many attendees were attracted to IBM's eight-booth exhibit was to inquire about the Peanut, the rumored scaled-down version of the Personal Computer intended for home use and expected to cost between \$600

and \$1,300. It had been anticipated several weeks ago that the system would debut here.

IBM sales representatives and marketing types manning the booth handled inquiries about the Peanut with thinly disguised hostility. They referred interested parties to the company's public relations people.

Some attendees said they were surprised that IBM would put in an appearance at a show that has yet to establish a solid track record. Others said it made perfect sense in light of the company's recent encouragement of third-party support for its microcomputers.

While scores of software suppliers writing applications programs for the IBM Personal Computer and XT (Continued on Page 13)

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## Disk Controller, Software Introduced

**SAN FRANCISCO** — Highlighting the product introductions at the first IBM PC Faire, held here recently, were the first hard disk controller for the IBM Personal Computer and compatible microcomputers and a series of software packages compatible with Lotus Development Corp.'s 1-2-3 spreadsheet program.

The hard disk controller, the Maverick SMD PC-80, can be used with 8-in. or larger disks that have either fixed or removable cartridges without hardware or software modifications, according to a spokesman for its vendor, Interphase Corp.

Systems equipped with the device can process information up to four times faster than Personal Computer look-alikes that don't have it, Interphase claimed.

The controller, which takes up only one slot in the Personal Computer, is compatible with the Microsoft, Inc. MS-DOS operating system and several other PC-compatible operating systems.

The Maverick costs \$1,895 in single quantities. Interphase is headquartered at 2925 Merrell Road, Dallas, Texas 75229.

The Reston Computer Group's Pro Works series of application packages is compatible with Lotus' 1-2-3 integrated package and will run on either the Personal Computer or Compaq Computer Corp.'s PC-compatible system.

The software includes Executive Assistant, a program providing users with a collection of time and work management tools, including files for organizing time and tasks for accessing customer information; Key Business Measures, a program that converts financial information into displays, and Business Forecasting, a program supplying a variety of business statements, balance sheets, automatically generating cash-flow forecasts and financial changes from a base year.

Each package carries a \$100 price tag. All three packages will be available by October, the vendor said. Reston is based at 11480 Sunset Hills Road, Reston, Va. 22090.

## Despite Rise in Output

# IBM Micro Production Still Trailing Demand

By Tom Henkel  
CW Staff

BOCA RATON, Fla. — Despite spring and summer boosts in production, IBM is still having a problem manufacturing enough Personal Computers and Personal Computer XT microcomputers to meet the demand for them.

IBM produced more Personal Computers and XTs during the month of June than in the entire first quarter of 1983, a spokesman said, but he would not disclose how many. "We're doing a good job of increasing production," but the demand for IBM micros "has significantly surpassed our expectations and has sur-

passed all industry expectations, too."

The need to increase production has brought in its wake the problems of getting more parts from OEM suppliers, training people to assemble the units and expanding assembly space, he added.

But a microcomputer dealer said last week that IBM's failure to meet demand for the micros seems to be as serious or even more serious than it was in June, when an IBM spokeswoman admitted IBM was having trouble producing enough Personal Computers and XTs to meet end-user and dealer orders and said IBM was stepping up microcomputer produc-

tion [CW, June 20].

"I wonder if IBM cannot meet demand or whether IBM's contractors cannot meet IBM's demand," pondered Ralph Wagner, president of Microsource Financial Inc., a Watertown, Mass. dealership.

The booming microcomputer business has caused a "serious shortage of products" among OEM vendors, he said.

### XT in Shortest Supply

The newer XT processors appear to be in shortest supply, Wagner said. Some XT users speculated that XT shortages may, at least in part, be a result of problems with the XT's integrated hard disk unit (story on Page 14).

Most corporate users currently want the XT processor, Wagner said, adding that about 80% of his clients are corporate users.

One corporate user is "kind of frustrated because we did our planning" but still could not get the Personal Computers and XT processors he ordered from IBM. "We were knocking on doors" to get more of the IBM micros when its bulk order did not come through, said Joseph Brophy, a vice-president with Travelers Insurance Co. in Hartford, Conn. "We bought them one at a time."

Travelers currently has enough Personal Computers to meet its

needs for the next six months. But at one point the insurer resorted to electronic cannibalism to upgrade some Personal Computers. Parts were taken from one processor to upgrade another, a replacement part would then be ordered from IBM to repair the victimized unit.

This method was faster than ordering upgrade kits from IBM, Brophy said.

"They deliver things in dribs and drabs," said Dick Griggs, systems manager for Chase Econometrics/Interactive Data Corp. in Waltham, Mass.

Griggs, who has been buying IBM micros through Computerland dealerships, said he got three of the four XT processors he ordered, but they arrived three months late.

Some peripherals, such as 150 char./sec. printers, are also very difficult to get, Griggs said. He has also found replacement parts difficult to come by. He theorized that IBM is trying so hard to get new systems out the door that it may be allocating more parts to the assembly line than to the repair effort.

But Travelers' Brophy disagreed. He thinks IBM has probably held back too many parts in the event they may be needed for repairs. That may have been one of the factors which contributed to the original slowdown in shipping micros, he said.

## PC Faire Means Business

(Continued from Page 12)

microcomputer firms in attendance, the two suppliers of operating software for the two micros, Microsoft, Inc. (MS-DOS) and Digital Research, Inc. (CP/M), were not there. Other software suppliers conspicuous by their absence included such firms as VisiCorp and Lotus Development Corp.

According to some software suppliers interviewed, the bigger software firms pushed up the PC Faire in favor of introducing new products later in the year at Comdex.

David Sudkin, PC Faire's general

manager, thought the show will continue to grow as long as IBM continues with its open architecture approach to the Personal Computer.

"They might decide to pull in the reins, but I don't think that would be in their best interest," Sudkin said.

With analysts predicting an eventual shakeout of IBM Personal Computer-compatible makers, Sudkin was asked if he was worried about the show's future.

"Yes, there will be a shakeout of hardware manufacturers, but they will be replaced just as quickly by software people," he said.

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# Latest Release of Microsoft's MS-DOS Assailed

By Ed Scannell  
CW Staff

**SAN FRANCISCO**—A handful of poorly implemented features allegedly contained in Microsoft, Inc.'s MS-DOS 2.0 operating system caused several vendors attending the IBM PC Faire here last month to accuse the company of being irresponsible.

The consensus among those interviewed was that Microsoft unnecessarily rushed the product to market six months ago in order to counterpunch Digital Research, Inc.'s concurrent CP/M operating system. One attendee accused the company of ignoring its duty to users and software developers as the No. 1 software firm in the micro industry.

MS-DOS has since become the de

## CW at PC Faire

facto systems software for IBM's 16-bit microcomputers.

The major problem with MS-DOS 2.0 apparently involves a format and carriage return command that automatically reformat IBM Personal Computer XT users' 10M-byte hard disks, wiping out all information carried on the disk.

However, when he was asked about the formatting problems in 2.0, Bill Gates, 27-year-old founder and chief executive officer of Microsoft, said he was aware of "zero prob-

lems" with MS-DOS 2.0.

PC Faire exhibitors' criticisms also focused on:

- The system's memory allocation subroutines, which the exhibitors said did not run well when executed with systems having over 512K bytes of memory.

- A lack of graphics subroutines.

- The fact that the operating system is disk-oriented instead of memory-oriented.

Another reported problem, which the exhibitors imputed to IBM rather than to Microsoft, is that none of the IBM PC-DOS compilers have been updated to take advantage of all MS-DOS 2.0's abilities.

Most of the exhibitors interviewed think some, if not all, of

these problems will be corrected in MS-DOS 3.0, expected to be released in 1984.

Bob Jones, founder of Amber Systems, accused Microsoft of shirking its responsibilities as a leading microcomputer software supplier by releasing a major product before it was ready. "Microsoft is selling software on a volume basis to the largest base of software developers in the world. They have to realize the responsibilities that go along with being number one," he said.

Jones, who is currently using MS-DOS 1.1, said he will not convert over to the 2.0 version "until I'm sure I'm not going to lose 60 pages of documentation."

### Will Not Affect Many Users

John Henderson, president of Tall Tree Systems, a manufacturer of both hardware and software products for the IBM Personal Computer and Personal Computer XT microcomputer, admits the system's end-of-file-sequence bug can cause serious problems, but he does not think it will affect very many users. "Probably less than 1% would use the clear-to-end-of-sequence because most don't require that kind of functionality. If you stay within the well-worn paths, you should have no trouble at all," he commented.

Henderson said MS-DOS is perhaps not as cleanly implemented as Unix, but added that he is impressed with the system. It is "a big step above CP/M," he asserted.

Exhibitors speculated the quality of the 2.0 release may be an indication the company is losing touch with its customers' needs as it gets bigger. This is an attitude the company cannot afford to adopt, they say, in light of the rumblings that IBM is thinking of dropping MS-DOS in favor of a proprietary product and that Digital Research is considering putting an MS-DOS interface on its CP/M operating system.

Summing up the attitude of the disenchanted, Amber Systems' Jones said Microsoft is "beginning to let [its] ego get in the way of [its] brains."

### Video Program Out For VAX-11 Users

**NEW YORK**—The ERI/Training Division of Essential Resources, Inc. has announced a video training program for users of Digital Equipment Corp. VAX-11 superminis running under the VMS operating system.

The program consists of nine modules covering VMS terms and definitions, paging, logical names and directories, the Digital Command Language, procedure files and batch processing, program development and debugging, programming in VAX/Fortran and common run-time libraries.

Available in a variety of video cassette formats, each video cassette plus five corresponding workbook costs \$490. All nine modules cost \$4,290.

ERI is located at Suite 1810, 310 Madison Ave., New York, N.Y. 10017.



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# But Purchases for Home Use Slow Estridge Says Micro's Success Exceeded Hopes

By Ed Scannell  
CW Staff

SAN FRANCISCO — In the opening remarks of his keynote address, Philip D. Estridge, president of IBM's Entry Systems Group, recalled for the attendees of the IBM PC Faire the uncertainty he and his colleagues felt a few hours before the company unveiled the Personal Computer.

"We were all wondering if it would be popular or if we would get laughed out of the room," he related.

But with analysts predicting that IBM will own 26% of the microcomputer market and go over the billion-dollar mark in microcomputer sales by year's end, it is difficult to picture Estridge and company ever express-

ing serious doubt about the Personal Computer's future.

Today, the Personal Computer "has gone beyond anything we ever expected. The product doesn't belong to us anymore. The design parameters have shifted; they are now determined by how the machine is used." Estridge stated, acknowledging the many third-party software developers which are taking the Personal Computer into applications areas that were unforeseen less than two years ago.

While IBM has had no trouble convincing people of the Personal Computer's advantages in the work place, Estridge said the company has been largely unsuccessful in con-

## CW at PC Faire

vincing these same people they can use the machine to similar advantage in their homes. "Telling people they can do at home what they do in work with a computer doesn't send them running out to buy a system," Estridge noted at the three-day PC Faire, held here Aug. 26-28 by Computer Faire, Inc. He said the recurring question asked by those skeptical of the computer's worth in the home is, "What do I use one for?"

### Peanut Introduction Imminent

IBM is "about to enter an era" where one of its chief concerns will be to supply answers to this question, Estridge said. This statement gave the 750 or so keynote attendees yet another reason to believe the introduction of the company's much-rumored home computer, Peanut, is imminent.

Speculation had it that the 16-bit system would be introduced at the PC Faire and would be available to consumers in early September through up-scale mass merchants such as Macy's department store. However, the rumors proved to be unfounded. Some industry observers now believe the system will come

out sometime in mid-October.

Peanut, reportedly a \$600 to \$1,300 scaled-down version of the Personal Computer, will run the same programs as the Personal Computer, enabling professionals to continue unfinished work at home and then transfer the files to their systems in the office.

Estridge contended that one of the biggest impedances to professionals and other consumers buying a home system is not price, but the lack of easy-to-use programs and clear and concise documentation. "We are going to have to come up with programs that first-time users can use right away. Too many are intimidated by a 100-page manual. We will have to learn to write them in less than 100 pages."

In addition to easy-to-understand documentation, Estridge said, another high priority is customer service, which involves more than providing hardware and software products to the user. "It also means solving his problems."

Because the microcomputer market is customer-driven, Estridge said, manufacturers will have to be better in tune with consumer trends. However, many manufacturers are mesmerized by technology and not thinking about what kinds of things the machine can do.

"Sometimes we are too close to the forest to see the trees," he said.



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## To Avoid Pitfalls

# Micro Use Planning Seen Vital to Businesses

By Jeffrey Beeler

**CW West Coast Bureau.**  
SAN FRANCISCO — Big businesses will have to plan carefully for the large-scale influx of personal computers if the companies expect to use the machines effectively and avoid pitfalls, according to University of California systems analyst Alvin Begun.

A well-conceived plan for corporate personal computer use should address issues such as user training and support, hardware and software selection and compatibility with existing central systems, Begun said at the recent IBM PC Faire held here.

Begun bases his observations on his own first-hand experience in overseeing the acquisition and support of personal computers at the university's main campus in nearby Berkeley, where he serves as principal analyst for Systemwide Administration.

Significant numbers of personal computers began appearing on the

Berkeley campus about a year ago, he recalled during an Aug. 26 PC Faire presentation. Realizing that the university's microcomputer population is sure to grow explosively and that uncontrolled purchases could spell long-term trouble, Begun devised a master plan aimed at making the institution's personal computers as effective and headache-free as possible.

The plan calls for the university to adopt strict standards for selecting personal computer hardware and software and to ensure that its micros and host mainframes will be able to communicate with each other. The strategy also requires the institution's main computing department to assume the responsibility for end-user training and support.

Under Begun's plan, the university will limit its personal computer acquisitions to a single hardware model — the IBM Personal Computer — and will standardize on three or four configurations of that system. In the

## CW at PC Faire

software arena, the institution will also restrict its support to one or two major offerings in each generic product category like operating systems, utilities, programming languages, communications aids and application packages.

"A large organization can't afford to have 15 models of personal computer hardware and a large number of different software packages out there among its users," Begun explained. "The problems of supporting such a wide assortment of products are just too great."

Training of end users and support also figure prominently in Begun's personal computer plan. "It's to an organization's own advantage to make the expertise in its central computing department available to its

end users," he said.

A major drawback with end-user training and support, however, is that they add significantly to a personal computer system's total overhead. So in planning for a large-scale microcomputer installation, big organizations should "double, triple or even quadruple" their original cost estimates to account for training and support expenses, Begun advised.

How effectively a company plans for and uses its personal computers reflects the skill with which it runs its corporate data center. "If you have a well-managed DP organization, chances are you will also use personal computers well, and if your central site is run poorly, you will probably be ineffective in implementing micros," Begun said.

Although personal computers can operate in several important modes and offer many potential advantages, they can also lead to various major problems.

- Systems activities can be unnecessarily and wastefully duplicated in mainframes and micros.

- Data can be duplicated when it is downloaded from a central system and, after being massaged independently by assorted local users, can lose its vital consistency.

- Legal liabilities can arise when end users copy a piece of licensed software without the developer's permission.

## Xerox's Kearns to Keynote OAC '84 in L.A.

ARLINGTON, Va. — The American Federation of Information Processing Societies, Inc. (AFIPS) has announced that David T. Kearns, president, chief executive officer and a director of Xerox Corp., will be the keynote speaker for the 1984 Office

Automation Conference (OAC).

Sponsored by AFIPS, the theme for the fifth annual OAC will be "Office Automation and You."

The conference is scheduled for Feb. 20-22 at the Los Angeles Convention Center.

Advanced registration for the conference costs \$100; on-site registration is \$125 for the technical sessions and the exhibit floor.

More information on OAC '84 is available from AFIPS, 1899 Preston White Drive, Reston, Va. 22091.



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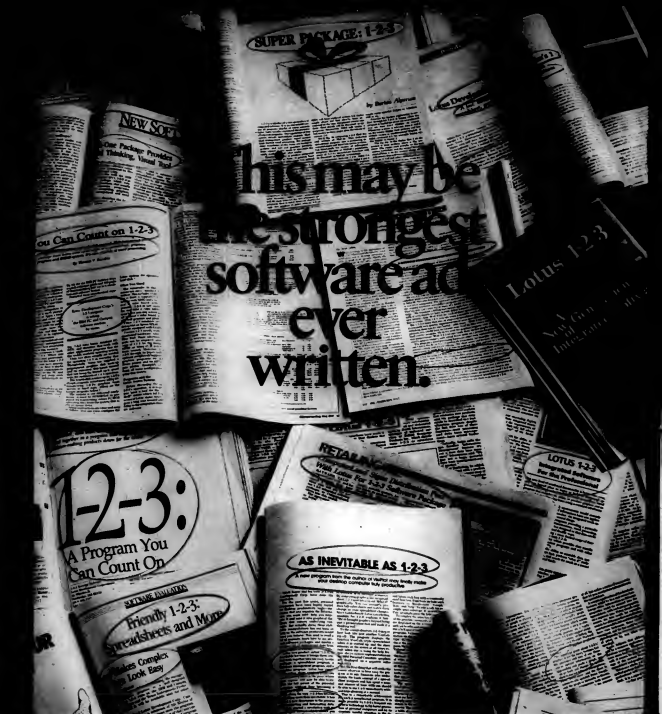
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## Banker-Realtor Net Cuts Mortgage Processing Time

By Ed Scannell  
CW Staff

TARRYTOWN, N.Y. — An investment banker here has put together what he claims is the first national mortgage banking network that promises to cut in half the time it takes to approve and process mortgage applications.

First Boston Capital Group's Shelternet network allows a prospective home buyer to apply for a mortgage through his real estate broker's office and receive a conditional commitment for a loan in less than an hour. Assuming all the financial information provided is accurate, this commitment assures the borrower that a loan will be made at a specified rate of interest.

"You can take an application, do an appraisal, do the follow-up work and close the loan inside of three weeks, whereas in California right now, it is taking anywhere from 60 to 90 days for a bank to process a mortgage," said John Maco, First Boston's director of sales, citing an example of how much time the IBM-based system saves.

Maco said potential home buyers type their applications directly into the IBM 3081 mainframe. A hard copy of the application form can be printed out directly from the CRT screen.

"The system can actually do the underwriting while you are putting the application in," Maco said. "The necessary verification forms are printed to correspond with whatever loan program you are applying for so that you no longer have to search for forms. Once the calculations are done and verification received, the information is put back in the computer, and a firm commitment is printed out."

### Hard Disk Version

Broken up a hard disk version of IBM's Personal Computer to begin the application process. Besides the hard disk and its drive, the microcomputer is typically configured with a high-speed printer and a modem for communication with the IBM 3081 bank in First Boston's Tarrytown headquarters. First Boston decided to develop the software for the system in-house after a joint effort with a Texas-based software house failed to produce a satisfactory package.

The cost to brokers wanting to access Shelternet is approximately \$16,000. That sum covers the cost of a fully configured Personal Computer with customized software, installation and the cost of setting up a separate mortgage service company. Maco explained that the broker's service company is a necessity if unlicensed brokers hope to be certified as mortgage originators.

"The bulk of the firms we deal with are the largest firms in their metropolitan areas, and none of them has ever been involved in mortgage banking."

"Legally, they have to secure a license in their particular state to collect fees as a mortgage originator," he explained.

Maco said licensed realtors (via lo-

cal financial contacts) will offer rates competitive with those offered by competing banks in their area. However, First Boston will also offer Shelternet through banks that can only distribute products and services in their "backyard," but would like to distribute them to other parts of the country.

After several months of participating in a test market, Skipper Morrison & Associates, Inc., an Atlanta-based realtor, closed the first mortgage using Shelternet this past May. Since then, First Boston has succeeded in signed up 46 companies that do a total of \$10 billion in business annually.

## If You've Got a Plan for Protecting DP Resources, Let Us Know

A Special Report on the growing issues surrounding information security will appear in the Nov. 28 issue of *Computerworld*. The report will focus on such issues as how to protect corporate data, software and hardware from unauthorized access, vandalism and natural disaster.

If you have a foolproof plan for protecting your data processing resources, *Computerworld* would like to hear from you. We are currently accepting articles on security in corporate environments, including disaster recovery plans, as well as articles offering technology updates on hardware protec-

tion devices such as uninterruptible power supplies and halon systems.

We are particularly interested in receiving articles outlining how actual security problems were discovered and how they have been resolved.

Articles should be a maximum of eight double-spaced pages; photographs and accompanying artwork are welcome.

The deadline for manuscripts is Sept. 19, and they should be addressed to Tom Henkel, Writer/Analyst, *Computerworld*, P.O. Box 880, 375 Cochituate Road, Framingham, Mass. 01701.

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## Why Gamble on Entry-Level DPers?

**Q** As a data processing manager, I don't believe that entry-level people are trained properly prior to employment. I also recognize that a high-potential entry-level programmer may be a cost-effective investment.

What is often overlooked is a new recruit's lack of appreciation for industry's expenditure of time, effort and money on training him. After obtaining training and experience, he sells himself to another company. As a result, his benefactor is reluctant to invest in this effort again.

Management is hesitant to award substantial salary increases until the efforts of entry-level personnel bear fruit. But too often the patience and gratitude of the programmer are short-lived.

Why should the industry gamble with entry-level programmers when the odds of their rapid departure are so great?

**A** A professional employee has an obligation to perform. An employer, and specifically management, has an obligation to challenge the employee and create opportunity. Those who leave within the first year and a half do so not for more money, but because they are not being challenged or do not see the opportunity for advancement.

If management neglects its obligation, then who can blame someone for seeking employment elsewhere? Management tends to view a trainee as nonproductive overhead for the first couple of years. The need for challenge and opportunity is no less acute during the training period than it is with experienced personnel. You can drastically change the odds of a rapid departure by confronting these high-priority personnel needs.

**Q** DP management's perception of the quality of today's entry-level programmers and their education is unjustified. After one bad experience, managers decide too quickly to recruit only people with experience. Students are like managers: Some are better than others.

As a data processing instructor, I feel our graduates are prepared to enter the work force. Our five instructors have nearly 40 years of industry experience, including operations, programming, systems and management.

Our entire program revolves around real world experiences. Our students must work to deadlines, provide documentation and produce a program that is 100% operational. Using Cobol, RPG, assembler and Basic, each student will write, test and debug code to 100 applications-oriented programs. We feel our people have at least the equivalent of one year's on-the-job experience.

Maybe I have missed the magic machine that mysteriously produces people with two or three years of experience. Or maybe some DP managers have forgotten how their careers got started.

**A** I have received many letters from professors who want to defend the quality of today's DP/information systems education. Yours was the most convincing.

**Q** I operate a small business and recently purchased a microcomputer from a retail store to help with accounting and word processing. After spending several months learning about the computer, I purchased the software. The hardware and software systems have been up and running for six months. We're basically happy with the software, but both packages have several irritating little bugs.

The retail store told me to contact

the vendor, but the vendor, who is 3,000 miles away, gives me the run-around.

Should I pursue the software problems with the retail outlet, the vendor or just live with it?

**A** Intense competition has forced vendors to release some proprietary software packages prematurely.

This is particularly true of software for micros. As a result, many packages have "irritating little bugs."

Given that you are a relative novice and that the flaws in the systems are not serious, I would recommend waiting for the next versions. Ask your computer retailer to alert you as



soon as the new versions are announced.

Long, president of Long and Associates, is a consultant, lecturer and author in the field of information services. If you have a question you'd like him to address, send it to Larry Long, Editorial Department, Computerworld, P.O. Box 680, Framingham, Mass. 01701.

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## Cuts CICS Programming Software Tool Speeds Pfizer's Shift On-Line

GROTON, Conn. — With pressure mounting to shift from batch jobs to on-line applications, the data center staff at Pfizer, Inc.'s Chemical Division here struggled to keep up with the demand. Developing on-line applications using CICS command-level coding, they found, was slow and laborious.

The process of preparing an on-line program required lengthy batch compilations every time a programmer made a change, according to Charlie Dame, system support manager with a staff of 10 programmers and analysts. Additionally, the development process required constant time-consuming communications be-

tween the applications programming staff and the systems programming staff.

"Both of these factors tended to slow down the development process," Dame recalled. Yet another problem was the increasing demand for computer time from the computer center's then IBM 370/138 to compile and then recompile the CICS command-level programs, he said. The computer center has since upgraded to an IBM 4341 Model Group II.

Concurrently, other entities within the Pfizer data processing organization had similar concerns for a way to develop on-line applications faster

and more economically. In the late 1970s, Dame and others began looking for a standardized application generator for the company's locations around the world.

Pfizer is an international manufacturer of pharmaceuticals, chemicals and other products. With 1982 sales of more than \$3.45 billion, it placed 144 on Fortune's 500 industrial corporations. It employs 40,000 people around the world.

In its search for the most suitable product, the Chemical Division installed IBM's DMS on a test basis for a few months, but decided the 1980 version still required unacceptable levels of batch compilation and com-

munications between applications programmers and systems programmers.

Pfizer then identified a half-dozen other applications generator products. One requirement for the applications generator product was the capability to access IBM's DL/I data base.

### Helped Narrow Down Selection

"This requirement helped narrow the selection process down dramatically," Dame said. "It ruled out a variety of products that emphasized the support of conventional access methods and other data bases that were relatively weak in supporting DL/I data bases."

Given this requirement and the results of an exhaustive reference check, Pfizer selected User Files On-Line (UFO), an application software product from Oxford Software Corp. Pfizer installed UFO on a trial basis in the spring of 1981.

"We found that we were able to get the applications working in very short order," he said. "In a matter of days, we had several different applications programs running." UFO met the test for the Chemical Division and was subsequently installed at corporate headquarters in New York and other domestic divisional centers, as well as at data centers in Belgium, France, Italy, West Germany and Canada, effectively standardizing it as the companywide applications development tool for the 370 family of computers.

The development of on-line applications is smoother and more cost-effective today, according to Dame. He said UFO reduces the need for CICS training and boosts productivity.

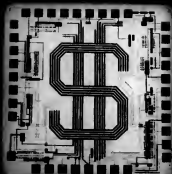
Tom Tarsovich, senior programmer/analyst in Pfizer's Chemical Division, agreed. "Programmer output must have increased at least three- or fourfold," he said. "Applications that required 40 hours under CICS command level usually require no more than 10 hours under UFO."

Tarsovich is committed to reducing the volume of batch work. "Why not give users screens instead of printed reports?" he asked. "With screens, end users can update their files anytime they want."

Future plans call for Pfizer taking maximum advantage of exchanging applications among divisions. In Europe, many of the applications developed at one location are now being transported to five other locations, saving even more development time and money. Dame hopes for increased activity among the U.S. Pfizer locations in this area.

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# Reporting System Speeds Test Results for Lab

NASHVILLE, Tenn. — With the aid of a fault-tolerant system and software packages of its own development, a laboratory company here has eliminated approximately 3,000 hours of clerical work per month and is able to provide doctors with a faster turnaround of sometimes critical specimen test results.

Until 1980, International Clinical Laboratories' (ICL) 10 offices handled testing procedures for private medical offices, clinics and hospitals manually. Personnel collected specimens and test requests and passed them on to the lab staff who scheduled the work. Results were tabulated manually and then typed out. The entire process normally would take two days.

With the computer-based reporting system, based around Tandem Computers, Inc.'s Nonstop minicomputer, lab technicians can now run a test the same afternoon it has been ordered by a physician as far as 600 miles away and have the results back the same day or the next morning.

## Network Link Planned

According to data processing manager Scott Grainger, who headed the team of software engineers that developed the system, ICL plans on linking all 10 divisions' computers together through Tandem's Nonstop network, a process he hopes will be completed within the next year.

Explaining how the system operates, an ICL spokesman said the computer prompts a technical aide for the accession number (a unique number applied to patient and specimen), the patient number, information about drugs the patient is using and other general information. The computer then automatically assigns procedures to appropriate technical workstations in the laboratory.

Next, in the aliquoting department, which handles the dividing of blood samples for tests, a computer-generated work sheet provides patient information and identifies tests to be performed.

Using the work sheet, a technical aide apportion and processes specimens for distribution to the various workstations.

Bert Hood, president of ICL's Southwest division, said the program has both reduced clerical error and saved time. "In any lab, the technician has to divide a blood specimen and process it before sending it to different departments for tests, and that takes up a lot of a technician's time."

"Our computerized work sheets free up technicians who can now spend more time testing. There's also a higher degree of specimen and work sheet integrity," Hood added, "because you don't have as many clerical errors."

After the technical aides distribute the specimens to workstations, ICL's laboratory personnel perform the tests. Some tests are performed

manually while others use instruments capable of entering data directly into the computer.

To assure test accuracy, a control serum is entered both before and after testing procedures. Before ICL sends out a report, a technical supervisor reviews the results of each lab test on the computer's monitor. This computer-aided verification process is an important safeguard in ICL's system because it significantly reduces human error, Hood explained.

"When you have a verification step on the computer, it obviously gives you a lot more control over quality. When you have a CRT [terminal] that is always available that a technical supervisor can use to review every test result, accuracy is im-

proved markedly," Hood said.

Once test results are verified, the fault-tolerant system collates data and prints out a lab report that is then delivered to a customer by courier for small-dollar volume accounts or through phone lines to printers for clients with larger accounts who depend on more frequent service.

Hood said the computer system has allowed ICL to communicate directly to data terminals at more than 200 of its accounts' laboratories located primarily in hospitals.

Those who have no terminals still benefit from telecommunications because the system can send information to branch offices, and local couriers speed the lab report delivery process.



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## Borne Out of WP Tool

# Aircraft Carrier Totes New Wave of DP System

NORFOLK, Va. — A computer-based planning and control system that grew out of a word processing application has kept the outfitting of a Navy aircraft carrier on track and remains the ship's major management tool, according to the ship's officers, who are docked here.

The same approach to managing information aboard the U.S.S. Carl Vinson has also resulted in an electronic mail facility and tracking and reporting systems that have improved internal communications and streamlined administrative functions.

The U.S.S. Carl Vinson is the nation's newest and most technologi-

cally sophisticated aircraft carrier. It is also among the largest and most complex mobile structures in the world. More than 1,000 feet long and as high as a 24-story building, the nuclear-powered vessel has a 4.5-acre flight deck and accommodates 100 aircraft. With a full air wing on board, her crew numbers about 6,000.

Most recently, a Wangnet link between the carrier's two Wang Laboratories, Inc. VS minicomputers became the first step toward a network for handling word processing, data processing and video applications.

An automated milestone charting system was one of the first manage-

ment tools designed by Capt. Richard L. Martin and the ship's Precommissioning Unit when outfitting began in early 1980. "What we're working toward is trying to do a better job of running an organization," said Martin.

The decision was made to use the ship as a test site for trying out new ideas and technologies. Another goal was to trim the administrative workload to free more of the officer corps' time for management functions and professional development.

Early versions of this planning and control system ran on a Wang Word Processor System 20, a System 30 and eventually on a Wang VS 80

computer as the Precommissioning Unit stepped up systems development and monitoring of shipyard work.

A set of glossaries and decision-processing statements, developed and written by Martin and members of the crew, automatically created screen formats so that users only had to key in specifics on the tasks and time frames.

### Elaborate Model Developed

A more elaborate DP model of the planning and control software has since been developed. Along with administrative applications, it runs on a standard Wang VS 100 computer. The system, with 2M bytes of main memory, includes one Wang 75M-byte disk drive and two Wang 38M-byte disk drives, one Wang tape drive and 56 Wang workstations, as well as 11 daisywheel and four-band printers.

The VS 80 is now dedicated to intelligence data. Its central processor has 384K bytes of memory and supports one 90M-byte disk drive, two workstations and two printers.

For each task, the planning and control system records the department, the division, the responsible officer, identification number date and time of occurrence or start and stop dates for extended projects. A numbering system that develops a hierarchy of tasks and allows individual items to be broken down into subtasks permits tight control of complex operations.

As a result, Martin pointed out, a process such as getting the carrier under way resembles the countdown for a space launch, starting days in advance and following a strict time sequence of events.

This planning discipline, he noted, "has allowed us to accomplish more things on schedule and to take on extra projects. Not only did we manage ship delivery and training better than anybody else has done it, we also ran a major project of carrying out systems development."

Electronic mail effectively complements telephone calls and face-to-face meetings for department heads, division officers and senior chiefs, who often use it in conjunction with the planning and control system.

"You don't have to worry about reaching somebody by phone right then and there," Martin commented. "You just quickly write him a note or put a task in the planning and control system and then write a memo saying, 'Fill in details of this' or 'Let's talk this one over.'"

(Continued on Page 28)

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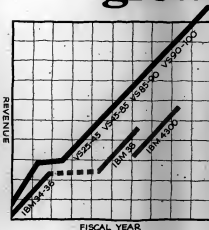
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## Datapro Source Books Offer Profiles on Micros, Vendors

DELRAN, N.J. — Datapro Research Corp. has published a source book containing key data on popular personal computer systems, as well as a "one-stop" reference guide to 2,500 companies marketing micro-computer hardware, software, peripheral equipment and services.

"All About Personal Computers" is said to feature concise profiles of seven new systems introduced by Mattel, Inc.; NEC Information Systems, Inc.; Panasonic Co. and other manufacturers.

Also included are updated product reports on Apple Computer, Inc.'s Apple IIe; Commodore Business Machines, Inc.'s Commodore 64; IBM's Personal Computer; NEC's PC-6000; Radio Shack's TRS-80 Color Computer 40; and other personal computer systems.

Each product report includes an overview of the manufacturer and a capsule description of system characteristics.

Tabular information provides specifications on system hardware, including the display screen, processor/memory, keyboard, printers, direct-access storage, data communications and I/O electronics and system software, including languages used, operating system characteristics, data base management systems, applications programs and communications support.

Also listed are auxiliary services about documentation, training, purchase/lease terms and warranties, pricing schedule, first shipment date, the number of units currently installed and product availability.

The introductory section of the guide reportedly answers many of the questions asked by first-time purchasers.

"Who's Who in Microcomputing 1983" profiles the many companies in the microcomputer market. The color-coded, 57-page guide is cross-indexed by application, product,

type of hardware system supported (for software companies) and company.

Each company profile in the guide includes the vendor's mailing address and telephone number, areas of principal business, applications focus, product line summary, primary customers served and sales concentrations, the date the company was founded, number of employees and the names of the company president and marketing director.

"All About Personal Computers" is available for \$29, and "Who's Who in Microcomputing 1983" costs \$39.95 from Datapro, 1805 Underwood Blvd., Delran, N.J. 08075.

## Micro-Based Training Program Explains 'Visicalc' Spreadsheet

NAPERVILLE, Ill. — Deltak Inc. has introduced a microcomputer-based training program said to introduce participants to the development of spreadsheet models using Visicalc's Visicalc software.

"How to Use the Visicalc Software Package" combines videotaped instruction with hours of hands-on computer exercises, a Deltak spokesman said. The series is divided into two courses and is aimed at beginners.

Also introduced by Deltak is a series that reportedly explains how data analysis works in practice, how to do top-down planning and how to identify and doc-

ument user views of data.

"Data Base: Data Analysis Techniques," features industry expert James Martin and is directed toward systems analysts who will be analyzing data requirements of end users in a data base environment, data administration personnel who work with analysts and technical managers and users who work with analysts.

All Deltak courses are available for an average rental fee of between \$50 and \$125 and can be purchased for \$1,750 from Deltak, East/West Technological Center, 1751 W. Diehl Road, Naperville, Ill. 60566.

## DATA GENERAL INTRODUCES THE DESKTOP GENERATION.



## Banking Meet To Discuss Security Issue

SAN FRANCISCO — Security problems of electronic banking will be among the newest topics discussed at the American Bankers Association's (ABA) 1984 National Insurance and Protection Conference. The conference is scheduled to take place Jan. 31 to Feb. 3 here at the Hyatt Regency Hotel Embarcadero Center.

The theme for the conference is "The Changing Role of Banking and Its Impact on Managing Risk." The topics under discussion will include data security, bank card fraud, computer room security and more.

Until Dec. 15, the cost of attending the conference is \$430 for members of the ABA and \$550 for nonmembers.

More information about the conference is available from the ABA's Security and Risk Management Division, 1120 Connecticut Ave. N.W., Washington, D.C. 20036.

# Calendar

## Week of Oct. 2

Oct. 3-5, New York — Long-Range Information Systems Planning. Contact: American Management Association, 135 W. 50th St., New York, N.Y. 10020.

Oct. 3-5, Washington, D.C. — Data Base Management Systems: A Comparative Analysis of General-Purpose Systems. Contact: Dataproc Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075.

Oct. 3-5, San Francisco — Data Base Management Systems: Concepts and Guidelines. Contact: Dataproc Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075.

Oct. 3-5, San Diego — Automation Group Annual Meeting. Contact: Donald W. Roaman, assistant

vice-president, Connecticut Bank and Trust Co., 99 Founders Plaza - F055, East Hartford, Conn. 06108.

Oct. 3-5, San Jose, Calif. — Data Communications Systems. Contact: Center for Advanced Professional Education Seminars (Cape), Suite 110, 1820 E. Garry St., Santa Ana, Calif. 92705.

Oct. 3-5, Los Angeles — IMS/VS Message Format Services. Contact: Data Base Management, Inc., 1075 Tolland Tpk., Manchester, Conn. 06040.

Oct. 3-5, Washington, D.C. — DL/1 Application Programming. Contact: Data Base Management, Inc., 1075 Tolland Tpk., Manchester, Conn. 06040.

Oct. 3-6, Washington, D.C. — De-

sign of Digital Control Systems. Contact: Richard White, George Washington University, Continuing Engineering Education, Washington, D.C. 20052.

Oct. 3-7, Orlando, Fla. — USE, Inc. Conference. Contact: USE, Inc., Box 461, Blandensburg, Md. 20710.

Oct. 3-7, Philadelphia — The 1983 Project Management Conference. Contact: Colette Tott, AGS Management, Inc., 890 Valley Forge Plaza, King of Prussia, Pa. 19460.

Oct. 3-7, New York — Structured Analysis/Design. Contact: Structured Methods, Inc., 7 W. 18th St., New York, N.Y. 10011.

Oct. 3-7, Orlando, Fla. — Structured Color Programming. Contact: Harris Education Center, 1025 W.

Nasa Blvd., Melbourne, Fla. 32919.

Oct. 4-5, Washington, D.C. — Interactive Systems Design. Contact: William G. Quirk Seminars, Suite 1500, One Corporate Center, Hartford, Conn. 06183.

Oct. 4-6, Boston — PC'83. Contact: Northeast Exposition, 822 Boylston St., Chestnut Hill, Mass. 02167.

Oct. 4-6, Tulsa, Okla. — The Second Annual Southwest Computer Conference. Contact: The Southwest Computer Conference (SWCC), Box 950, Norman, Okla. 73070.

Oct. 4-7, Los Angeles — Programming in C — A Hands-On Workshop. Contact: Ruth Dordick, Integrated Computer Systems, 3304 Pico Blvd., P.O. Box 5339, Santa Monica, Calif. 90405. Also being held Oct. 25-28 in Boston.

Oct. 4-7, Los Angeles — CAD/CAM Systems. Contact: Ruth Dordick, Integrated Computer Systems, 3304 Pico Blvd., P.O. Box 5339, Santa Monica, Calif. 90405. Also being held Oct. 16-21 in Boston.

Oct. 5, New York — Advanced Database II. Contact: Center for Advanced Data Processing, Inc., Suite 402, 450 Seventh Ave., New York, N.Y. 10123.

Oct. 5-6, San Jose, Calif. — CompuSource '83. Contact: Norm DeNardi Enterprises, Suite 204, 289 S. Antonio Road, Los Altos, Calif. 94022.

Oct. 5-7, San Jose, Calif. — Network Communications Protocols. Contact: Center for Advanced Professional Education (Cape), Suite 110, 1820 E. Garry St., Santa Ana, Calif. 92705.

Oct. 5-7, New York — Data Communications: Effective Network Design. Contact: Dataproc Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075.

Oct. 5-7, Salt Lake City, Utah — Data Communications Systems. Contact: Center for Advanced Professional Education (Cape), Suite 110, 1820 E. Garry St., Santa Ana, Calif. 92705.

Oct. 5-7, Los Angeles — Integrated Office Systems. Contact: National Institute for Management Research (NIMR), Seminars, P.O. Box 3727, Santa Monica, Calif. 90403.

Oct. 5-7, Montreal — Local-Area Networks. Contact: Center for Advanced Professional Education (Cape), Suite 110, 1820 E. Garry St., Santa Ana, Calif. 92705.

Oct. 5-7, Atlanta — Personal Computers and Networking. Contact: Center for Advanced Professional Education (Cape), Suite 110, 1820 E. Garry St., Santa Ana, Calif. 92705.

Oct. 5-7, Detroit — SNA and Teleprocessing Access Methods. Contact: Center for Advanced Professional Education (Cape), Suite 110, 1820 E. Garry St., Santa Ana, Calif. 92705.

Oct. 5-7, San Jose, Calif. — Unix. Contact: Center for Advanced Professional Education (Cape), Suite 110, 1820 E. Garry St., Santa Ana, Calif. 92705.

Oct. 6-7, Chicago — Troubleshooting the Data Communications Network. Contact: The American Institute for Professional Education, Carnegie Building, 100 Kings Road, Madison, N.J. 07940.

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## EDITORIAL

### Stop Dangling Carrots

In an industry filled to overflow with acronyms and cryptic abbreviations, two three-letter terms — CDP and CCP — are currently the source of much debate. And for good reason.

The acronyms stand for Certificate in Data Processing and Certificate in Computer Programming, respectively; they are awards given to individuals within the data processing industry who pass certain tests administered by the Institute for Certification of Computer Professionals. Unfortunately, although the idea behind the tests and certification — to instill professionalism within the data processing industry — is a good one, reliance on a single test and a paper award to achieve that goal is a bit optimistic, if not impossible.

In fact, the ICCP recently conceded that it "lacks the necessary resources" to keep its certification programs up to date with the highly volatile information systems industry [CW, Aug. 29]. As a remedy, the organization suggested a number of alternatives to the single-test, single-award system; chief among them is a so-called Capstone certification that would recognize professionals "who have distinguished themselves through outstanding accomplishment and demonstrated knowledge" — a sort of Academy Award for lifetime achievement.

Perhaps the ICCP and other organizations that promote data processing certification, like the Data Entry Management Association, should take a harder look at data processing professionalism before promoting certificates, gold stars and merit badges that do little besides inflate a resume. These organizations might perform more of a service if they were to take the helm as full-time educators, stressing the benefits of continuing education and work experience rather than the carrot of a paper certificate. They might even join forces with the many universities and colleges across the country that have successfully altered their business data processing programs to keep up with the fast pace of computer technology or have started programs that lead to graduate degrees in information processing and management information systems.

Although 26,000 individuals — less than 3% of the data processing profession as a whole — have reportedly taken and passed the CDP exam, the companies doing the hiring obviously have little faith in certification programs. This is demonstrated by their lack of support for the ICCP's efforts.

Moreover, some surveys have shown that individuals may have a better chance in the industry if they skip the degree route altogether and gather experience.

Professionalism is not something that can be tested, awarded or hung on a wall.

## DATA PAST

### Five Years Ago Sept. 11, 1978

WASHINGTON, D.C. — Satellite Business Systems' authorization to go ahead with its plan to provide domestic satellite communications services was tossed back into the lap of the agency that granted it.

The U.S. Court of Appeals for the District of Columbia, which maintained that the Federal Communications Commission needed to give greater attention to antitrust questions, effectively repealed Satellite Business Systems' license.

### Ten Years Ago Sept. 12, 1973

WASHINGTON, D.C. — AT&T admitted that detailed information concerning specific types of harm allegedly being caused by the interconnection of customer-provided equipment "was not currently available to a greater extent than was supplied" earlier.

AT&T's response was made to the Federal Communications Commission after a request for more details about the connection of noncarrier equipment to the network.



'Why Doesn't Someone Stop Us Before We Really Mess Things Up?'

## LETTERS

### Micro Use and Security

I have recently developed a policy for a leading financial services company on microcomputer use and security. I would like to share some of my viewpoints on issues discussed in the article "Security Experts Raise Red Flag About End Users' Floppy Disks" [CW, July 18].

The security of microcomputer systems is primarily a user responsibility. Management information systems management can only play the following limited role:

- Develop a policy that explains user responsibilities for the security, integrity and recoverability of their own systems.

This should come with guidelines and be published.

It should then be circulated to all employees under the signature of the senior executive who normally issues policy.

- Provide training and technical support, if requested.

- Ensure that facilities for interconnecting microcomputers to corporate networks and data bases include appropriate protections for corporate resources.

If this doesn't work, a management problem exists, and locking up disks (as suggested in the article) will not work either.

Alleen McGahan  
Management Consultant  
New York, N.Y.

### Simple Is Better

There comes a time when those of us who love the English language must cry out against the likes of Charles P. Lecht.

While he is probably very knowledgeable about the world of computers, Lecht's bombast is unbearably pompous. This is very unfortunate, because on those rare occasions

when I manage to fight past the poor writing style, it is obvious to me that Lecht has a wealth of ideas.

If Lecht were not so intent on trying to impress us with his pretentious metaphors and ornate sentences, he would probably have quite a few more readers.

Lecht should read *Elements of Style* by Will Strunk and E.B. White. In it, the authors keep repeating the cry, "Simplify, simplify, simplify!"

Rather than making sure that we know his knowledge extends from Parmenides to Obiwan Kenobi, as he does in "For Whom the Bell Tolls... For Free" [CW, Aug. 8], he might just get on with the point; we already know he's smart. It would be so pleasant to see him abandon his I-wish-I-were-Carl-Sagan style of writing and do what he does best: hypothesize about the future.

Paul Pazniokas  
Executive Vice-President  
Ponce, Inc.  
Dallas, Texas

### Why Not Award Hackers?

I note with interest the reaction of Donn B. Parker of SRI International, Inc. in the article "Parker Finds Nothing Funny About Exploits of Hackers" [CW, Aug. 22]. I think the whole thing is funny.

It's funny that so many systems had vendor-supplied passwords, but had no security measures that notified administrators when invalid attempts were made to enter them.

The hackers should get a prize for emphasizing the problem of DP security. These kids didn't touch 1% of the country's systems. Think of all the banks out there with no encryption on their communications.

Lyne E. Queen  
DP Director  
Bentley College  
Bentley, W. Va.



LECHT ON SCIENCE/Charles P. Lecht

# AT&T: No Retooling Without Reschooling

I know, I know, they're going back to work even as this newspaper goes to press. We greet the news with the mixed emotions that Darius might have experienced in Guaguala before his fateful battle with Alexander — relief that the implacable Macedonian "civilizer" was further away than he had thought, but fully aware that the reprieve would prove all too temporary. We, poised on our latter-day battlefields, must confront the settlement of the AT&T strike and ponder its not inconsiderable consequences. What are we to do with the inevitably swelling ranks of AT&T personnel displaced by automation? (Would they loathe Persepolis if they could, or would they be satisfied with a token conflagration at Basking Ridge, N.J.)

Well, I did say in the first part of this series that the solution was obvious (CW, Aug. 22). Since AT&T will shrink by the end of 1983 as a consequence of the now-famous divestiture, many, if not all, of the affected union membership may be compelled to find jobs elsewhere. Some may find these in our newly emerging and competitive telephone equipment sales industry.

Some of these same automation age orphans may find sanctuary, however transitory, in the newly independent Bell operating companies. After all, the disruption to both the

*This is the second in a two-part series on labor and automation.*

process of computing basic telephone customer charges and maintaining the subnetworks, which the dismemberment of AT&T's data processing network must bring about, will doubtless require the continued oversight and patience of many experienced individuals. And the complexity of this problem could well, in its turn, be dwarfed by the cross-charging/cross-maintenance systems that redeployment of the former AT&T corporate family members as 23 competing entities (22 Bell operating companies plus AT&T) might be expected to engender.

So long as this is happening, the staff that might otherwise have been deemed eminently dispensable will instead be sorely needed to help keep our nation's communications systems going and to cope with the occasional disasters that fragmentation of any such pervasive, global structure must perform bring about. It does not require enormous insight to anticipate that many of AT&T's integrated business systems are about to be dismantled, mirroring the fate of the world's flagship communications company.

Whether or not the employees

went back on this occasion is irrelevant. A signed contract is only as good as each party's capacity to honor it. Eventually, automation should assume many, if not most, of the jobs currently held by the union membership. Each time they walk out, they give yet further proof of their redundancy in today's AT&T. Though the confusion of divestiture may reverse this, it will do so only temporarily. If we accept this, we can get on with finding a new direction for the hordes of ex-AT&T employees and for others waiting in the untidy wings of the publishing, automotive and myriad other vulnerable industries whose jobs are forfeit to automation.

## Schools to the Rescue

America's schools to the rescue! No retooling without reschooling!

Let's engage America's formidable educational institutions in a powerful rescue plan for industry. Rather than having one's formal, mandatory education end in the 12th grade, school could become an ongoing and lifelong requirement (except, of course, during holidays, vacations, times of illness or unavoidable retreat and the other, customary interruptions by which our nobler designs are routinely tailored to our real-life frames of mind). Persons who became unemployed would be

given the option, subject to a known time limit, of getting another job or of returning to school for retraining along the lines of their choice while being sustained by some sort of guaranteed, subsidized income replacement program.

This would differ, at least conceptually — which is to say vitally — from what we now know as "unemployment insurance" in that it would not be structured upon one's willingness to admit his or her factlessness in society or require that one tacitly accept the characterization by one's former colleagues of oneself as a leech. Rather, this program would find its ethical center of gravity in the very targeted quality of one's between-job activity — learning.

## Respectable Work Alternative

In short, learning would come to be viewed as a respectable and equivalent alternative to work, a part of the normal oscillation in a world evermore automated, provided one saw it in its proper social context: a means for one's reintegration into the working mainstream. This would have the effect of redefining such education-generated income, transforming it into a matter-of-fact endorsement by society of personal enterprise and ambition rather than, as is the case with today's unemployment insurance.

(Continued on Page 34)

HUMAN CONNECTION/Jack Stoner

# Centralized Management Key to U.S. DP Ills

Hardware and software systems are growing out of control. A select group of vendors is dominating the DP inventory. There is no meaningful, coordinated DP planning. Mismanagement of DP resources exists. The full potential of the technology is not exploited.

These were the findings of a federal government task force, organized by the chairman of the Interagency Committee on Automated Data Processing back in 1971, which was tasked to review and assess long-range planning for government DP programs. The results? Absolutely nothing.

Then, in 1978, came the president's DP Reorganization Project, a quasi-public/private initiative headed up by the president's Office of Management and Budget (OMB). The findings? More of the same, but expressed in more eloquent terms:

- Reluctance by OMB to exercise managerial, not budgetary, control over DP systems.

- Failure of OMB to implement the law of the land regarding the acquisition and control of DP resources — the Brooks Act, P.L. 89-306.

- Abdication of agency management of its designated responsibilities for managing information technology resources.

- Tensions between the Congress and the executive branch that resulted in the House of Representatives acquiring de facto responsibility for

*The Grace Commission, technically known as the president's Private Sector Survey on Cost Control, and specifically its Task Force on Automated Data Processing/Office Automation, recently concluded its study and reaffirmed in its June 1983 report the pathetic status of our federal government DP establishment. After all, it's been only 12 years since the first revelations of DP management ineptitude and, as we all know, several generations must pass by and a couple of marches on Washington, D.C., before any substantial change occurs in the bureaucracy.*

federal DP acquisition.

As a consequence, in 1980, Congress passed the Paperwork Reduction Act with the goal of installing uniform, consistent policies and practices for effective management of information processing relating to both the public and private sectors. One concrete result was the formation of OMB's Office of Information and Regulatory Affairs, which assigned people to each major federal agency for the purpose of coordinating DP policy and practices.

Now the newest review has been completed. The Grace Commission, technically known as the president's Private Sector Survey on Cost Control, and specifically its Task Force on Automated Data Processing/Office Automation, recently concluded

its study and reaffirmed in its June 1983 report the pathetic status of our federal government DP establishment. After all, it's been only 12 years since the first revelations of DP management ineptitude and, as we all know, several generations and a couple of marches on Washington, D.C., must pass by before any substantial change occurs in the bureaucracy.

This study attributed the sorry state of federal DP to, using "my words, OMB's dereliction of duty for implementation of the intent of the Paperwork Reduction Act. The findings indicated that OMB focused its efforts on the laudable but minuscule problems of avoiding duplication in agency efforts to obtain data from the citizenry instead of taking an ag-

gressive role in DP management. In other words, the key problem with the DP situation is the vacuum of DP leadership within the federal government.

## Proper DP Management

The commission defined needs for proper DP management that might as well be copied from a college freshman's textbook on elementary business management. I'm restating them here to emphasize that managers of all levels, regardless of business function, need to tend to their basic responsibilities first. It is suggested that DP management in the federal government requires:

- The authority to take actions necessary to implement required changes.

- Expertise in the management of information systems.

- Focus on management issues and processes rather than those dealing with technology.

- Influence and control over budget oversight.

In a way, though, I have sympathy for OMB's reluctance to take a firm grasp of federal DP because I, for one, would not want to be subjected to the massive lobbying of vendors who seek increased shares of the federal market.

But personal concerns must be set aside, and genuine leaders must be found who can bring federal DP out of its morass.

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## Reschooling Alternative

(Continued from Page 33)  
ance, an emblem of failure. So bold a move would inject new meaning and purpose into life in society, whether or not one were employed at any given moment.

A positive action program that insists jobless persons enter some educational program and pays them to do so can reverse the tide of ignorance that creates pressures upon the hapless individual

to work or be deemed worthless by his fellows.

It can also short-circuit the mechanism that transforms failure of self-esteem into a much wider, and more sinister, source of social cost, let alone personal tragedy.

### Who Will Pay?

Who will pay for this program? Who else but ourselves — out of corporate profits (particularly those

enhanced by the progress of automation), taxes, perhaps licensing fees on business (or even home) computer installations, donations and God knows what else. I suspect the cost of such a program would be very much less than that of any alternative we've thus far considered.

As a multiplier of productivity, our automation can and must yield yet additional revenues for our country in the world competitive scene. As multipliers of intelligence, our schools can generate yet additional intelligence in our citizens wherewith to solve the problems raised by competition without resort to open conflict.

Since our survival depends upon continued learning anyway, why not recognize this fact formally and get on with it. Perpetual access to rigorous, purposive schooling while one is not working may seem revolutionary to some, if not downright sinful. Well, if this be sin, then it is such a sin as makes a virtue of the highest form of personal pleasure — self-illumination and development of one's potential.

Lecht is president of Lecht Sciences, Inc., a New York-based think tank specializing in computer and communications technologies.

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## Enhanced Version Of Testing Package Out for IBM CPUs

SAN JOSE, Calif. — Application Development Systems, Inc. has announced an upgraded version of its Xpediter Cobol testing and debugging system for IBM mainframes.

Major enhancements include support for multiple breakpoint processing at any location and expanded support for IBM's System Productivity Facility (SPF). For breakpoint processing, a NEXT command permits the user to step through code one or more statements at a time. It also supports intercepting program execution at the next instruction involving a branch. A WHEN command gives control to the user whenever a data element changes.

The full range of testing and debugging features may be used at any or all breakpoints, the spokesman said. The package provides interactive facilities that initialize or modify data anywhere in the program; start, suspend and stop execution at any location; bypass or simulate the function of program logic; and display program data symbolically at any point.

Xpediter runs under IBM OS/VS and VM/CMS operating systems and supports IBM's TSO, SPF and CMS facilities as well as IMS and other data base environments, the spokesman said. It costs between \$27,500 and \$42,500, depending on options selected from 1530 Meridian Ave., San Jose, Calif. 95125.

## Cobol Key to Developing Line of Portable Software

NEW YORK — How do you design a software system that is independent of the form of its data and can run equally well on a Burroughs Corp. mainframe, a Wang Laboratories, Inc. minicomputer and an IBM microcomputer?

That was the problem faced by Security Information Services Ltd. (SIS) in early 1982. SIS resolved it by writing a system in a subset of a standard programming language and by making extensive use of copy libraries to remove nonstandard features from the body of the system, according to Mark Brand, a principal at SIS.

"The techniques are useful not only in designing a software system that can run on various pieces of hardware, they also help ensure that a system is flexible and

easy to maintain," according to Brand.

The need for transportable software arose after SIS completed an intensive six-month marketing study into the portfolio management requirements of money managers, Brand said.

"We had expected to find that there was a need for a stand-alone turnkey system and to identify the system's required functionality," he said. "However, we found that [managers] generally wanted a system that could run on their existing equipment and use their existing files," Brand continued.

That equipment included mainframes, minis and micros from a variety of vendors and supporting a variety of different

(Continued on Page 38)

### For IBM VSI, MVS

## Enhanced 'DCMS' Unveiled

CHERRY HILL, N.J. — Value Computing, Inc. has announced a new release of its Data Center Management System (DCMS) for IBM VSI and MVS operating systems, including MVS/KA.

Major enhancements to Release 11.0 include the ability to respond automatically to unpredictable occurrences in a data center, extended telecommunications capability among the three on-line components of DCMS, the addition of a second job event table and a new subsystem for cap-

turing tracking data.

Through the system's on-line data base maintenance component, the user creates a table that contains user-defined events and system-defined rules, a spokesman said. The events are various conditions that could develop, while the rules are either on-line job submission or job tracking commands. When a specific event occurs, the system automatically determines the appropriate rule and invokes it.

The user can communicate with the three on-line components using Beam/Viam, IBM's TSO, CICS and Master Console System and Applied Data Research, Inc.'s Remote Operating System Conversational Operating Environment. The user can switch between data base maintenance, job submission and job tracking commands in the same work session.

The user is also provided with a copy of the main production job event table, the spokesman said. The Value Computing subsystem captures tracking data without the use of hooks and has multiple product support capabilities.

The complete package, including scheduling, on-line data base maintenance, automatic job submission and on-line job tracking costs \$39,000 for VSI and \$64,000 for MVS from 498 N. Kings Highway, Cherry Hill, N.J. 08034.

## Information Builders Unwraps Interface for Focus, ACF2

NEW YORK — Information Builders, Inc. has announced an interface between its Focus data base management system (DBMS) and the ACF2 security system developed by SKK, Inc.

The Focus/ACF2 interface will reportedly provide users with a Focus identifier in the ACF2 logon identification record. Focus will then automatically set that identifier as the user's Focus password. This function eliminates the need for multiple passwords, according to the vendor.

Another function provided by the in-

terface permits ACF2 to defer to Focus security when Focus is being used to read non-Focus files and data bases.

The interface will be functional in all Focus environments, including IBM's TSO, CICS, IBM/DC and batch operations, the vendor said. It will be available during the third quarter of 1983 at no charge to existing Focus users. The Focus DBMS is available for license fees starting at \$23,000 or for monthly rates of \$510.

Information Builders is based at 1250 Broadway, New York, N.Y. 10001.

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## To IBM Personal Computer Honeywell Minis Get Micro Link

FOUNTAIN VALLEY, Calif. — Hoberg & Associates, Inc. has announced a software package for Honeywell, Inc. DP56 computers which is said to enable users of the IBM Personal Computer to access files and applications on the Honeywell mini-computer.

Called HP200, the software is comprised of system and communications software for the Personal Computer under the Personal Computer-DOS operating system and DP56 software that interfaces with Honeywell's Gcos M00400 files. With a dial-up or direct connect via asynchronous communications, the package can be used to emulate a

Honeywell VIP 7200 CRT or can function as a file transfer utility, according to the vendor. The Personal Computer's printer then becomes a buffered remote printer for the DP56, the vendor said.

## Work Management Package Announced for System/38

CLEVELAND — Pioneer Software, Inc. has announced the Daily Work Management System for the IBM System/38 processor.

The package is written in a structured version of IBM's RPG III programming language and uses externally defined files utilizing data dictionary references, the vendor said.

The package is an interactive data base package designed to help managers keep track of day-to-day activities and at the same time allow users to become familiar with the use of an IBM 5251 or compatible display stations, the vendor said.

The package consists of three components: daily work management, itinerary planning and message handling. These components allow the user to maintain a calendar of daily activities at half-hour intervals between 8 a.m. and 5 p.m. The package can also be used to plan and print itineraries and expense reports and

For one Personal Computer and one DP56 host, the software is priced at \$695. Further details may be obtained from Hoberg & Associates at 16901 Mt. Hope St., Fountain Valley, Calif. 92708.

send messages to both single and multiple workstations in either an information or inquiry mode, the vendor said.

The package will be available Oct 1 and costs \$950, the vendor said from 4239 W. 150th St., Cleveland, Ohio 44135.

## Report Generator Introduced, Fits IBM Dictionary

PITTSBURGH, Pa. — Data Relationships Software, Inc. has released Draft, a productivity aid for users of the IBM data dictionary. Draft provides generation of user-defined reports from information stored in standard and/or extended categories of the dictionary, a spokesman said.

Draft is a key word-driven program generator that resembles a simple compiler language, the spokesman noted. It uses IBM's Program Access Facility as a low-level access method embedded within a concept-oriented interface to the dictionary. The product includes a range of data manipulation and program logic.

Draft leases for \$285/mo from Data Relationships Software, 712-A Investment Building, 239 Fourth Ave., Pittsburgh, Pa. 15222.

## Directory Lists Micro Programs

WASHINGTON, D.C. — The American Bankers Association is offering a resource directory of funds management programs for micro-computers.

Covered in the publication are programs for asset/liability management, bank financial management, bond swap programs/portfolio management, financial futures/hedging and economic forecasting.

Each entry contains the supplying firm's address and telephone number, size of banks serviced by the firm, software program name, hardware requirements, computer languages supported, type of instruction/consultation, program cost and narrative description.

The publication costs \$25 and is available from the American Bankers Association, located at 1120 Connecticut Ave. N.W., Washington, D.C. 20036.

## Seminar: How to eliminate development steps.

Seminars on Callinet's IDMS/R with Automatic System Facility will be held in the following cities during the coming weeks.

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Boston, MA	September 15
Calgary, ALCA	September 15
Charlotte, NC	September 22
Chicago, IL	September 7
Cincinnati, OH	September 12
Cleveland, OH	September 12
Columbus, OH	September 19
Dallas, TX	September 7
Des Moines, IA	September 20
East Chazy, NY	September 21
Evansville, IN	September 21
Grand Rapids, MI	September 15
Hartford, CT	September 14
Bohannon, TX	September 20
Indianapolis, IN	September 20
Jacksonville, FL	September 20
Kansas City, MO	September 22
Lexington, MA	September 7
Los Angeles, CA	September 21
Memphis, TN	September 7
Minneapolis, MN	September 20
Montreal, Q.T. (Fr.)	September 8
Montreal, Q.T. (Fr.)	September 14
Nashville, TN	September 14
New Orleans, LA	September 20
New York, NY	September 11
New York Long Isl. NY	September 11
San Francisco, CA	September 28
Seattle, WA	September 28
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## Release 6.0 Out Of 'Keyfast'

PARAMUS, N.J. — HAM Systems Software, Inc. has announced Release 6.0 of its Keyfast on-line data entry package for users of IBM and compatible mainframes using CICS. Major enhancements to the Keyfast package include a data dictionary function, help screens and improved security.

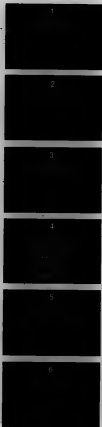
By using the data dictionary function, users can define any file to the dictionary. The file can then be accessed for verification, validation or data extraction using exit coding. This, the vendor said, allows the user to access any user file without creating programming code.

Help screens are both system- and user-defined to the field level. In addition, extra security features have been added to exclude specified users from certain tasks and batch entry.

Other features of Release 6.0 include: multiple data pools for departmental security, remapping of formats, totaling enhancements, 9,999 formats, an unlimited number of data batches, format profiles, data entry rules and printed help screens, the vendor said.

Version 6.0 is available in seven languages including English, French, German, Spanish and Italian. The release costs approximately \$17,000 for DOS environments and approximately \$23,000 for OS environments. HAM Systems Software is located at 351 Evelyn St., Paramus, N.J. 07652.

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## Software System Designed To Run on Variety of CPUs

(Continued from Page 35)

data access methods and languages, Brand said. "While some systems supported an indexed sequential-access method, others supported a data base," he said.

"And the manner of using the access method differed from manufacturer to manufacturer. Even when the manufacturers purported to provide Cobol that kept to Ansi standards, each implementation only partially attained the level described by Ansi. It seemed we could create, at best, a 'model' system and customize it for the particular user," Brand said. However, the company was determined to write a portfolio system that could be easily transported. Key

to the system was the choice of language, Brand said.

### Cobol Similarities

The company chose Cobol because it tended to be similar across the various machines. Yet there are numerous variances, Brand noted.

"For example, packed numeric is not common on all versions and, where supported, may differ in its particular implementation," Brand said.

"Consequently, we chose a simplified Cobol subset," Brand said. Synactically, the version chosen excluded those features that had differences among the compilers. The features that were deemed that were not fully standard were implemented in copy libraries that were performed or in separate CALL routines.

"Copy libraries become part of the body of the program at compile time," he said. "Called routines are always outside the body of the program. These nonstandard features were primarily file, screen and printer I/O and certain computational routines."

In addition, the sentences and paragraphs of the routines, when written, were to follow strict standards and formats so that they could be translated for another machine, he said.

The initial Asset Management package was implemented on a Wang VS at the end of 1982. It consists of over 150,000 lines of code divided among over 100 programs and 200 copy libraries, Brand said. It uses over 15 different files.

### First Client

The first client for the package was an investment bank with a large Burroughs system. The package was converted over a three-week period. Conversion consisted of writing a customized program to "translate" the package for the bank's use and to write the customized I/O routines to access its data base files, according to Brand.

"In the process we found various minor inconsistencies between Wang and Burroughs Cobol."

"In those instances we chose to correct the inconsistencies by finding language that was acceptable in both versions," Brand said. He noted that the same process was recently used to convert the package for use on an IBM Personal Computer.

"We believe that it is possible to design a software system that is readily transportable between different computer systems," Brand concluded.

"Moreover, if properly designed, the system can be independent of the manner in which the data is stored," He noted that this can be accomplished by:

- Writing the system entirely in Cobol.
- Using a subset of Cobol that is the "least common denominator" of the languages available.
- Isolating system I/O from the main program logic.
- Adhering to strict standardization of language format.

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## UNILOGIC

## 'Louis' Announced, Processes Honeywell IDS II Data Bases

ST. LOUIS — Evolving Computer Concepts Corp. has announced Logical 'On-Line Users Inquiry System' (Louis), which offers the capability for processing Honeywell, Inc. IDS II data bases.

Louis is a generalized query and reporting software tool that is intended for use by non-DP end users, the vendor said. It can be used for both ad hoc and recurring data retrieval requirements. It is written in assembly code and generates machine language code tailored to satisfy the query specified, according to the vendor.

The software runs under Honeywell's Gcos on Honeywell ma-

chines including the Series 6000, Series 60, Level 66 and 68 and the DPS 8.

Louis costs \$30,000, the vendor said. Suite 102, 301 Sovereign Court, St. Louis, Mo. 63011.

## Geisco Offers 'Focus' System Over Mark 3000

ROCKVILLE, Md. — A data base management system and information control system is now available over General Electric Information Services Co.'s (Geisco) IBM-compatible Mark 3000 teleprocessing service, the company has announced.

Using a nonprocedural, fourth-generation language, Focus is designed to provide a full range of functions, including data storage, data maintenance and data analysis, the vendor said.

Developed by Information Builders, Inc. of New York, Focus reportedly provides an integration of queries, reporting, graphics and statistical analysis with one language.

Typical monthly user fees range from \$5,000, based on data stored, reports used, updating of data base, storage and connect, according to the vendor.

More information is available from Geisco at 401 N. Washington St., Rockville, Md. 20850.

## 'MHTran-1' Out For Converting DOS to OS BAL

HACKENSACK, N.J. — MHT Services, Inc. has announced the availability of its MHTran-1 DOS conversion software to OS Basic Assembly Language (BAL) analyzer/translator.

The use of MHTran-1 is said to simplify the task of converting IBM DOS assembler programs to IBM OS. Conversion personnel are aided by a one-page module summary and extensive flagging of constructs that require analysis in the conversion process, according to a spokesman for the vendor.

The product reportedly licenses from \$2,400 to \$9,900, depending on requirements. The vendor is based at 90 W. Franklin St., Hackensack, N.J. 07601.



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## Financial Tool Designed For System/38

SCHAUMBURG, Ill. — Outlook Software, Inc. has announced Outlook/38, a financial modeling package for the IBM System/38.

The package incorporates spreadsheets with unlimited consolidation capability, graphics and a data file interface that writes the model, a spokesman said. It also features over 35 built-in financial and statistical commands, "if then" calculations, table look-up functions and a report writer. A model build editor guides the user through the modeling process, the vendor said.

The product also includes detailed Help text facilities and over 20 predefined models, the spokesman said.

The product is available for \$2,850 from Outlook Software at Suite 117, 1 Woodfield Lake, Schaumburg, Ill. 60195.

## Debugging Tool Offered, Serves Burroughs Users

TALLAHASSEE, Fla. — ESI has introduced a productivity aid for Burroughs Corp.'s medium-size systems users.

Idebug/MS is an on-line interactive debugging facility that reportedly allows the Cobol programmer to use source-level names to identify all data items and paragraphs in the program under test. The software allows testing and debugging to occur without any recompilation, particularly in ANSI 74 Cobol environments, the vendor added.

The software is priced from \$13,000 to \$18,000, depending on configuration, from ESI through P.O. Box 5617, Tallahassee, Fla. 32301.

## CRWTH Unveils Restructuring Of Course Prices

SANTA MONICA, Calif. — CRWTH Computer Coursewares, an interactive computer-based training firm, has announced a new price structure that reduces prices by 5% for customers who order more than one course.

At the same time, CRWTH announced a price increase for the course "Using [SAS Institute, Inc.'s] SAS" to \$8,500.

CRWTH's offerings include three basic courses: "Introduction to Data Processing," "Introduction to Data Communications" and "Introduction to the Information Center." In addition to this, more advanced courses on DP skills, Information Builders, Inc.'s Focus, IBM's ADPS II and Informatics, Inc.'s Answer/DB are offered.

Further details are available from CRWTH, which is located at Suite 200, 613 Wilshire Blvd., Santa Monica, Calif. 90401.

## 'Locate' Targets DEC RT-11 Users

NORTHAMPTON, Mass. — Fairbrother Associates has announced Locate, a utility program for users of Digital Equipment Corp.'s RT-11 operating system that allows location of

files on multiple, physical, logical or virtual devices.

Locate reportedly eases file location by supporting all wild-card queries. The program's output line is es-

## Law Firm Management Tool Out

JERICHO, N.Y. — CA-Lawfirm, a software system for law firm management and client accounting, is now available from Computer Associates International, Inc.

CA-Lawfirm was designed to run on the IBM System/34, System/36 and IBM Personal Computer in a network environment. Functions include time accounting, disbursement accounting, billing and accounts receivable.

The system reportedly provides for a variety of formats for billing and reports and allows the user to define its own client codes. It can be integrated with other CA products, including CA-General Ledger and CA-Accounts Payable.

CA-Lawfirm costs \$35,000, including implementation, training and maintenance and support for one year. Computer Associates is at 125 Jericho Tpk., Jericho, N.Y. 11753.

essentially the same as DEC's DIR command with the addition of the device name preceding the file name, a spokesman said. The RT-11 Command String Interpreter is used to parse the command line, and it may be driven from a command file. Device names are checked when they are added to the search list. A maximum of 64 devices is allowed. The output listing defaults to the console terminal, but may be directed to any valid RT-11 device or file, the vendor said.

Uncommented source code costs \$150, and commented source code costs \$500 from Fairbrother Associates, which can be reached through P.O. Box 685, Northampton, Mass. 01061.



## Utilities Productivity Series Serves IBM System/34 Users

WOODLAND HILLS, Calif. — Jeffrey J. Silden Software has announced two initial offerings in its Utilities for Productivity series for IBM System/34 users.

GTLD/34 (Get Local Data Area) allows the DP manager to read actively and/or update any user's local data area and user program-status indicators from the system console, according to the vendor. With GTLD/34, any user's job control can be interactively debugged and maintained, Silden noted.

The second utility program, TRMOFF/34 (Terminal Off), dis-

plays the status of all local and remote terminals and allows the console operator to sign off any CRT not currently running a job from the system console. The feature is intended to prevent the situation in which a System/34 cannot run certain operations in dedicated mode because a terminal was left signed on, Silden said.

Both GTLD/34 and TRMOFF/34 are written in IBM System/34 assembler and require 2K bytes of main memory to execute. They are priced at \$85 each from Jeffrey J. Silden, Suite 100, 21500 Califa St., Woodland Hills, Calif. 91367.

## For Opus-1 System

## 'IAS' Accounting Tool Out

IRVINE, Calif. — The Naked Mini Division of Computer Automation, Inc. has announced a multiuser integrated accounting package for processors using the firm's Opus-1 operating system.

Called the Integrated Accounting System (IAS), the package allows the user to share common company data bases. This, the vendor said, gives the package multiuser capabilities supporting up to eight users at a time.

IAS is compatible with the firm's Omnix desktop computer systems and features a modular design. Applications such as accounts receivable, accounts payable, order entry/invoice control, general ledger and

payroll are available. All modules are compatible with each other and are capable of stand-alone operation. Both object code and source code versions of the modules are available.

The object code for the modules costs \$500 each. When all five modules are purchased together, the price is \$1,600. Source code for the modules costs \$900 each, with a combined purchase price of \$2,500. The vendor is located at 18651 Von Karman, Irvine, Calif. 92713.

## MRPplus System Supports Users Of Wang VS

MILWAUKEE — Manufacturing Systems, Inc. has announced the MRPplus integrated manufacturing system for users of the Wang Laboratories, Inc. VS series of computers.

MRPplus is a modular manufacturing system written in Cobol designed to integrate manufacturing control, shop scheduling and financial functions. The program provides full materials requirements planning and capacity requirements planning, the vendor said.

The system incorporates full screen data editing, on-line documentation and menu program selection. It costs \$50,000 from Manufacturing Systems at 3645 W. Elm St., Milwaukee, Wis. 53209.

## Interpreter Out For Databus

BELLEVUE, Wash. — An interpreter to enable software written in Datapoint Corp.'s Databus language to be downported to IBM Personal Computers has been announced by Photon Software, a division of Care Computer Systems, Inc.

Matchmaker, according to Photon, will enable Databus application producers to expand into the microcomputer software market and provide a wide array of new software applications for personal computer users.

Matchmaker costs \$6,000 from Photon Software at 636 129th Ave. N.E., Bellevue, Wash. 98005.

## Course Targets IBM System/38

WOODLAND HILLS, Calif. — Automated Training Systems, Inc. has announced "Interactive RPG-III," a computer-assisted training course for the IBM System/38. The emphasis of the course is on workstation files, file maintenance, data entry, screen design aid, subfiles and display device files, a spokesman said.

Included are nine audio cassettes, five manuals and workbooks with visuals and text and two diskettes with exercises and sample source programs. Copies cost \$695 from Automated Training Systems, Suite 107, 21250 Califa St., Woodland Hills, Calif. 91367.

## Alaska. A Natural place for a Network.

### NET-WORK Distributed Data Processing System

Alaska has always been famous for its natural environment. Now it has a Natural Network as well.

The combination of Software AG's NATURAL, NET-WORK, and ADXAS has given Alaska's statewide MRS Department the tools it needs to keep information flowing throughout the biggest state in the U.S.

NATURAL is Software AG's fourth-generation online application development system—a tool that provides the productivity needed in a place where people are the most precious resource of all. Only NATURAL programmer can typically do the work of 10 to 20 COBOL programmers.

NET-WORK is the distributed processing software that allows

Alaska's officials to manipulate data from multiple systems hundreds of miles apart—with-out any worry about what's actually in the data.

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## Micro Notes

Digital Research, Inc. has introduced DR Graph, an interactive graphics and editing tool that reportedly develops slide presentations, trend charts and financial analysis reports. Running under the vendor's CP/M operating system for the IBM Personal Computer, DR Graph is priced at \$295 from Digital Research, Box 379, 160 Central Ave., Pacific Grove, Calif. 93950.

PMI, Inc. has introduced Microscreens, a screen generator package said to allow the operator to produce clear screen formats using Basic. Priced at \$119, Microscreens is available from PMI at Box 87, Buckfield, Maine 04228.

Azdata, Inc. has introduced a software development system (ASDOS) for the Scopap hand-held portable computer/terminal. Based on the UCSD Pascal Version 2.1 P-System and running on

any user-supplied IBM or IBM-compatible personal computer, ASDOS costs \$2,600 from Azdata at 4102 148th Ave. N.E., Redmond, Wash. 98052.

Canned Software Corp. has announced a Cobol source code generator that reportedly can be used on most microcomputers compatible with Digital Research, Inc.'s CP/M operating system. Besides generating clean source code, the Business Application Generator (BAG) also self-generates an operator's guide, the company said. Training time ranges from two hours to two days, depending on the user's knowledge level, the vendor said. BAG sells for \$1,995 from Canned Software, Rt. 1, Box 37, Pineville, Mo. 64856.

Information Unlimited Software, Inc. has upgraded its Easyfamily and Easybusiness microcomputer software to be

compatible with the IBM PC-DOS 2.0 operating system. The software includes Easywriter II word processing, priced at \$350; Easywriter spell checking, priced at \$225; Easyrunner electronic spreadsheet, priced at \$250; and Easyfiler data base manager and report generator, priced at \$400. The Easybusiness family includes modules for general ledger, accounts payable, accounts receivable, order entry and inventory control and analysis. Each module is priced at \$995 from Information Unlimited Software, 2401 Mannings Way, Sausalito, Calif. 94965.

Key Software, Inc. has announced Resq, a data base management system for the IBM Personal Computer and Personal Computer XT. The Compug Computer Corp. Compug and Microsoft, Inc.'s MS-DOS operating system. The product uses English-language menus and Help

screens and documentation designed for the end user. A free-form design system is employed for screen displays and printed reports, and the system can accommodate up to 60 fields per record and 80 characters per field. It costs \$395 from Key Software, Suite 138, 2350 Devon Ave., Des Plaines, Ill. 60018.

Samna Corp. has announced Samna Word, a word processing package for the IBM Personal Computer. Texts, insertions, deletions, Inc.'s Professional and Digital Equipment Corp.'s Rainbow computers that is said to offer capabilities equal to or greater than dedicated word processors. The product offers three levels of Help features with each succeeding level providing more in-depth instruction, a spokesman said. It costs \$450 from Samna, located at Suite C-1200, 2700 N.E. Expwy., Atlanta, Ga. 30345.

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Picture Perfect Plot, a business graphics program for the Hewlett-Packard Co. HP 7470 and Sweet P plotters, has been released by Centerpoint Computer Applications.

Designed for all CP/M 80-compatible microcomputers, the Victor Business Products, Inc. Victor 9000 and the IBM Personal Computer, Picture Perfect Plot allows the user to produce standard pie, bar, line and text graphs, as well as create custom diagrams and pictorial enhancements, such as flow charts.

With the program, graphs and charts are created by menu-driven commands in plain English, according to the developer. In addition, the user can make a freehand sketch and enter it into the computer through a coordinate system. The sketch can then be stored, blown up, reduced, rotated or repositioned anywhere on the page.

Picture Perfect Plot can be purchased for \$295 through HP dealers or from Centerpoint Computer Applications at 500 N. Michigan Ave., Chicago, Ill. 60611.

CMA Micro Computer, Inc. has announced the release of a medical billing package and a dental office management system for use on the IBM Personal Computer and compatible systems.

Client Medical Billing PC processes accounts receivable and prints monthly bills, client payment receipts and American Medical Association universal insurance claim forms.

Dental Office Management PC handles such dental office functions as records management, word processing, appointment management, claim forms preparation and accounts receivable.

The Client Medical Billing PC requires an IBM Personal Computer or compatible computer with at least two 320K-byte floppy disk drives, 320K bytes of random-access memory, IBM PC-DOS 2.0 or Microsoft, Inc.'s MS-DOS 2.0 and a 130-col. printer. The system allows billing for an unlimited number of practices, with up to 10 practitioners and 50,000 patients per practice.

The dental office management system requires a 128K-byte IBM Personal Computer or a Personal Computer XT with at least 3M bytes of hard disk storage and a 132-col. printer.

Either package is priced at \$1,595 from CMA Micro Computer at 3572 Santa Fe Trail, Yucca Valley, Calif. 92284.

Micro Data Base Systems, Inc. has announced the integration of an IBM SQL/DS 26-like query system into the vendor's Knowledgebase information management system for the IBM Personal Computer. Knowledgebase integrates relational data management, spreadsheet processing, forms management and structured programming facilities into one system. Priced at \$500, Knowledgebase is available from the vendor through Box 248, Lafayette, Ind. 47902.

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 ny?Counttheclericalpeople.Howm  
 anyemployeesareclerical?Givemeth  
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# Natural Language Processors

By Vincent C. Rauzino

## A Question of Semantics for Man and Computer

*'Query languages were treated initially as cute but limited gimmicks that unsophisticated users could learn in a few days.'*

*'The value of a more natural language for man-machine communications acquired commercial credibility from a large and practically untapped body of potential users who were . . . not prepared to spend a year learning Cobol.'*

Perhaps the most important "user-visible" systems change in recent years is the natural way computers and users can now talk to each other through software. Intellect, from Artificial Intelligence Corp., and English, from the Mathematica Products Group, are two examples of query languages that can handle the ambiguities and other semantic problems of natural language processing.

The hierarchy of computer language begets and begets is headed by machine language, which is right down in the muck and mud of instruction opcodes, operands and indexing bits. Some pundits have labeled this level of man-machine communications as "coding in crossword puzzle." Continuing with this analogy, assembly language moved programming into the double-acrostic level.

Cobol was the first significant higher level language beyond assembly. In fairly rapid order, there followed Fortran, PL/I, APL, Basic and others. Each language consists of a limited subset of English words and standard symbols that are combined with rigid positional rules through a procedural syntax, or "grammar." The words and symbols in these languages are semantically trivial. A DO or a GET, for example, can just as easily be replaced by GRZ or BYLB without losing an ounce of function, as long as GRZ and BYLB are defined to the system, and placed correctly in the syntactical framework.

Each of these higher level languages is thus a conceptual extension of machine language. An opcode ADD with qualifiers becomes a Fortran DO with qualifiers. The DO is compiled to yield dozens, sometimes hundreds, of machine instructions. But aside from these purely quantitative differences, machine language and Fortran (and

most other high-level languages) are structurally similar.

The introduction of data base management systems (DBMS) in the late '60s and early '70s stimulated the development of "query" languages that began to give users an easier, less structured way of communicating with the computer. These languages still rely heavily on procedural syntax, though a less rigid form than Cobol or Fortran syntax, but permit users to construct requests from a standard English-language vocabulary with phrases such as "Display," "How many . . .," "What are . . ." and so forth. These languages also permit a certain freedom in the order or placement of the request words within the syntactical framework.

Query languages were treated initially as cute but limited gimmicks that "unsophisticated" users could learn in a few days and use productively in a few weeks. That meant the languages were obviously inferior or because, after all, it takes a year to learn Cobol.

It's true that query languages were not and are still not very good applications development tools, but they were never intended to be. They are one of many solutions explored to solve the programming crunch that afflicts practically every installation with anything larger than a Digital Equipment Corp. PDP-11. They allowed the so-called casual user to step right up to an Adabas or an IDMS and get/give information from/to the system without bothering the busy programmers. Users liked them, so practically every major DBMS vendor tacked on a query language in the 1970s.

Then along came DBMS based on the relational data model, beginning with Relational Software, Inc.'s Oracle in the late

## IN DEPTH

70s and now including Relational Technology, Inc.'s Ingres and IBM's Structured Query Language/Data System (SQL/DS). These DBMS are supplied only with a query language, but a considerably beefed-up query that combines ease of use with much of the applications development power of the classic Codasyl-type data manipulation languages.

The development of query languages paralleled the diffusion of computers into lower echelons of

**'Query languages forced vendors to make certain philosophical shifts in their perceptions of language structures to bring the user interface closer to the ultimate ease of natural language dialogue.'**

business and into pockets of formerly ignored personnel in large main-frame-oriented companies.

So the value of a more natural (meaning closer to conversational English) language for man-machine

communications acquired commercial credibility from a large and practically untapped body of potential users who were prepared to accept and use a computer, but who were not prepared to spend a year learning Cobol.

This patent recognition of an enormous commercial potential provided the final stimulus for the continuing development of "natural" query languages.

#### Procedure vs. Semantics

Query languages forced vendors to make certain philosophical shifts in their perceptions of language structures to bring the user interface closer to the ultimate ease of natural language dialogue. The most important shift was from purely syntactical processing toward semantic processing. To illustrate, nonquery languages are handled by a computer somewhat like a rigid metal ruler. At inch 1, the computer expects to find a command; at inches 2, 3 and 4, it expects to find qualifiers; at inch 5, it expects to find a comment; and so forth.

The operative word here is "expects." If the sequence is changed, the computer attempts to interpret a qualifier as a command or a comment as a qualifier because the positioning of a language component completely controls its interpretation. Also, the component itself is semantically independent of the user's native, or natural, language. It can be literally anything as long as the anything is defined to the computer.

Query languages cannot be structurally rigid because they attempt to deal with the frequently ambiguous (from a computer's point of view) rhythms of natural language. A phrase like, "Show me the December sales figures for our Chicago office" follows a neat subject-verb-predicate order that the computer can latch onto. But a phrase like, "December sales figures, Chicago office. Let me see them," which must generate precisely the same code inside the computer, has an inconsistent order and includes a pronoun for good measure.

The second phrase is just as intelligible as the first phrase to a human listener, but a similar reconciliation is a major task for a computer interpreter that relies entirely on structure. The interpreter cannot rely on syntactical consistency for queries expressed in natural language and must depend completely on the natural language meanings of each word to develop an accurate response to the query or command.

Semantic query languages such as IBM's Query by Example (QBE) and the several SQL variants used by Oracle, Ingres and SQL/DS, demonstrate a surprisingly wide range of interpretive capabilities vs. a rather small set of syntactical rules, but they still require a month or two of training and practice before they can be used well. And they are limited to

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# NATURAL LANGUAGE IN DEPTH

one-for-one semantic interpretations with very little ability to resolve ambiguities, to interpret (or reinterpret) in context, to accommodate incorrect grammar and to do all the many other tasks needed to handle a natural language interface. At this point, classical software techniques break down.

## Enter AI

Artificial intelligence is impossible to define. In fact, a nondefinition is the one thing that all AI experts seem to agree on. We will go along with the experts. But there is a body of hardware and software techniques, developed at places like MIT and Stanford University, that can cause machinery to simulate intelligent behavior.

We will examine one small segment of these techniques, called semantic information processing, throughout the balance of this article.

At least two software vendors have successfully incorporated AI methods into commercially available query languages — Intellect, from Artificial Intelligence Corp. (AIC), and English, from the Mathematica Products Group (MPG). Each makes

```

IN COBOL:
ON ENFILE (EMPLOYEE_FILE) GOTO WRAP_UP;
PUT SKIP LIST(1982 MAY ACT SALES, 1982 MAY EST SALES,
'DIFFERENCE', '% CHANGE')
DO WHILE(1=1);
  READ FILE(EMPLOYEE_FILE) INTO(EMPLOYEE_RECORD);
  IF EMPLOYEE_RECORD.DEPT = 'MEN'
    EMPLOYEE_RECORD.DEPT = 'WOMEN'
  THEN DO;
    DIFFERENCE = Y1982_MAY_ACT_SALES - Y1982_MAY_EST_SALES;
    CHANGE = 100 * (Y1982_MAY_ACT_SALES - Y1982_MAY_EST
    SALES) / Y1982_MAY_ACT_SALES;
    PUT SKIP LIST(Y1982_MAY_ACT_SALES, Y1982_MAY_EST_SALES,
    DIFFERENCE, CHANGE);
  END;
WRAP_UP

IN FORMAL QUERY:
PRINT 1982-MAY-ACT-SALES, 1982-MAY-EST-SALES,
(1982 - MAY-ACT-SALES - 1982-MAY-EST-SALES) /
(100 * (1982-MAY-ACT-SALES - 1982-MAY-EST-SALES)) /
WHERE (DEPT = 'MEN' OR DEPT = 'WOMEN');

IN NATURAL LANGUAGE:
FOR THE MEN AND WOMEN DEPARTMENTS, COMPARE THE ACTUAL
AND FORECASTED SALES FOR LAST MONTH.
  
```

Figure 1. Comparison of Cobol, Formal and Natural Languages

the quantum leap from seminatual, or formal, query languages, such as SQL, to languages that can handle the ambiguities and other semantic

problems of natural language, such as English. The extent of this leap is best illustrated by an example, provided by AIC, that shows the same

problem expressed in Cobol, then in a formal query language and, finally, in Intellect (see Figure 1).

The examples clearly demonstrate the transition from the semantically independent/structurally dependent style of Cobol to the semantically dependent style of natural English. Another example shows how Intellect produces an identical interpretation from five different statements of the same request. Note that word order, sentence structure and sentence type, which are important procedural details in Cobol and Query, are irrelevant to Intellect.

```

(Use)
HOW MANY CLERICAL PEOPLE WORK FOR
THE COMPANY?
(Intellect Internal)
COUNT THE EMPLOYEES WITH EEO
GROUP = CLERICAL
(Intellect display)
88

(Use)
COUNT THE CLERICAL PEOPLE.
(Intellect Internal)
COUNT THE EMPLOYEES WITH EEO
GROUP = CLERICAL
(Intellect display)
88

(Use)
HOW MANY EMPLOYEES ARE CLERICAL?
  
```

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## IN DEPTH

(Intellect: Internet)

COUNT THE EMPLOYEES WITH  
EEO GROUP - CLERICAL.  
(Intellect: display)  
58

(User)

GIVE ME THE NUMBER OF EM-  
PLOYEES IN CLERICAL.

(Intellect: Internet)

COUNT THE EMPLOYEES WITH  
EEO GROUP - CLERICAL.  
(Intellect: display)  
58

(User)

CLERICAL COUNT.  
(Intellect: Internet)COUNT THE EMPLOYEES WITH  
EEO GROUP - CLERICAL.  
(Intellect: display)  
58The preceding examples  
demonstrate how AI can  
broaden the scope of a querylanguage. The specific de-  
tails of the AI implementa-  
tions are hidden by prop-  
rietary rights of the vendors.  
However, both Intellect and  
Mathematica's English rely  
on techniques described inthe general literature to  
parse the queries, to inter-  
pret meanings from context  
and to resolve ambiguities.MPC defines its English as  
an "expert system," which  
means that an expert's  
knowledge and problem-  
solving methods have been  
captured in software and can  
be executed independently  
of the expert with the same  
results the expert would pro-  
duce — a tall order.The kernel of the system  
consists of four dictionary  
levels, and the entire system  
is appended to a Ramis II  
data base. The bottommost  
dictionary establishes an im-  
mediate semantic parameter  
of 3,000 to 4,000 words. Only  
the primary definition of  
each word is established at  
this level.Part of this dictionary con-  
tains general vocabulary  
words (give... show... get  
...). and the rest of it con-  
tains basic words that belong  
within the domain of applica-  
tion. The second-level dictio-  
nary is the standard Ramis  
II dictionary, which provides  
information about the data  
stored in the data base. This  
level permits the parsing  
process to be joined with all  
the information contained in  
the data base.The third-level dictionary  
enriches the basic vocabu-  
lary with jargon, colloquial-  
isms, applications-specific  
qualifiers and other informa-  
tion that expands on the  
purely linguistic and seman-  
tic qualities of the basic dictio-  
nary. The fourth level  
consists of a dynamic dictio-  
nary that retains the results  
of ad hoc definitions sup-  
plied by the user in response  
to machine queries. The in-  
formation accumulated in  
this dictionary is passed  
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# NATURAL LANGUAGE

## IN DEPTH

information permanently into one of the other levels.

The structure of Intellect is similar but relies more heavily on the related data base for semantic definitions and supports a multiple inverted hierarchy of index lists to simplify data base searches.

The actual coding that applies "intelligent" reasoning to natural language interpretation is, of course, the essence of each vendor's product, and neither vendor is too anxious to release a decade's worth of procedural details. However, the general principles are reasonably straightforward exercises in basic logic.

For example, much of the basic dictionary can be thought of as a synonym catcher that reduces phrases such as "Show me . . ." "I want . . ." and "Get . . ." to their equivalent "Display . . ."

Another part of the dictionary can recognize superfluous words so that a request such as, "Show me the December sales figures for the Chicago office," can be stripped on the fly into, "Display . . ." Dec. sales figures . . . Chicago office." The phrase "Chicago office" can now key a record in the data base and "Dec. sales figures" is one identifiable attribute of the record.

However, the data base may retain gross, net and perhaps even a few other types of sales figures. Even a human listener could not determine which figures the requester wants and would have to ask for clarification.

A not-too-smart machine might simply default to an implied "(gross) Dec. sales figures . . ." and let it go at that. But a smarter machine would recognize that a multiple-attribute

response to a single query is probably incorrect, so list the types of sales figures available and ask the user for clarification.

A dialogue example (Figure 2) from MPG's English shows how the system can paraphrase a confusing request by extracting an implied logic and asking the user to verify or correct its reasoning.

Ambiguity resolutions, which appear to be almost magical displays of machine intelligence, result from rather simple reapplications of logical AND or OR operations on all combinations of ambiguous pairs.

For example, the phrase, "Tell me about green Ford" contains an embedded ambiguity on the name Ford or the manufacturer Ford. If there is no color attribute in the name records, then the ambiguity is immediately resolvable.

If there is a color attribute in the name file, the system does a four-term search that might look like this:

COLOR	GREEN AND HPI	FORD	HTS
COLOR	GREEN AND NAME	FORD	3
NAME	GREEN AND HPI	FORD	3
NAME	GREEN AND NAME	FORD	8

(User)

display the total units sold and profits received from each customer for each product.  
give me a subtotal as well.

(English)

SOME PROBLEMS HAVE OCCURRED IN INTERPRETING YOUR REQUEST.  
PARAPHRASE OF REQUEST:

PRINT THE TOTAL UNITS ENTRIES AND THE TOTAL PROFIT ENTRIES  
SORTED BY CUSTOMER AND PRODUCT.  
PRINT SUBTOTALS AS WELL.  
PROFIT IS DEFINED AS UNITS (LISTPRICE-UCOST).

IS THIS OKAY?

PLEASE ENTER "YES" OR "NO":

(User)

yes

(English)

PAGE 1

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21TRA12

10622

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Figure 2. Paraphrasing a Confusing Request

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A BSC to ASCII protocol converter for 3271 emulation. It's designed for companies with Bynne who want to use ASCII devices in their networks now, but may want to upgrade to SNA/SDLC later.

#### PCI 718/SNA

A BSC 3270 to SNA/SDLC converter for 3274 emulation. It eliminates the need to buy new SNA/SDLC CRT's or controllers, thereby giving new life to Bynne investments.

#### PCI 1051

An ASCII to Sys 34 38 protocol converter. Expanding the System 34 38 terminal network used to be an expensive proposition. Not now, with the help of the 1051.

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CC-4

## IN DEPTH

## TRANSCRIPT

(User)  
PLEASE REPORT THE SALARY OF  
CLERK PEOPLE IN THE WEST AND  
SOUTH.

(Intellect)  
I'M NOT FAMILIAR WITH THE  
WORD "CLERK."  
IF IT'S A WORD YOU EXPECT TO  
FIND IN THE DATABASE HIT THE  
ENTER KEY.

OTHERWISE EITHER FIX ITS  
SPELLING OR ENTER A  
SYNONYM FOR IT.

(User)

CLERICAL.

(Intellect: internal)

PRINT A REPORT OF ANNUAL  
SALARY AND LAST NAME OF ALL  
EMPLOYEES WITH EEO GROUP  
— CLERICAL & STATE  
— ALASKA, ALABAMA, ARKANSAS,  
ARIZONA, CALIFORNIA,  
COLORADO, FLORIDA, GEORGIA,  
HAWAII, IDAHO, MISSISSIPPI,  
MONTANA, NORTH DAKOTA,  
NEW MEXICO, NEVADA,  
OKLAHOMA, OREGON, SOUTH  
CAROLINA, SOUTH DAKOTA,  
TENNESSEE, TEXAS, UTAH,  
VIRGINIA, WASHINGTON, WEST

VIRGINIA OR WYOMING

(Intellect: display)

ANNUAL  
SALARY LAST NAME

\$30,000 DRISKILL  
\$31,000 WHITE  
\$32,000 SAGER  
END OF PAGE — HIT THE ENTER  
KEY TO CONTINUE.

## COMMENT

If you make a spelling error or key in something Intellect does not understand, you can correct it. Intellect does not leave you wondering what happened. It tells you it has a problem. You don't have to retype the whole request, just the problem word.

Intellect figured out that West and South were mutually exclusive (i.e. No one lives in the West and South). Instead of saying "NO RECORDS SATISFY YOUR REQUEST," as in a normal system it figured out what you wanted. Intellect dealt with the ambiguity of conversational language. Specifically, Intellect changed "and" to "or." It also changed West and South into lists of states.

*'The user interface shows the effects of a radical shift in language processor design from a procedural to a semantic orientation.'*

And the answer might be THERE ARE 4 GREEN FORD CARS IN THE FILE, AND THERE ARE 2 PERSONS NAMED FORD WHO ARE GREEN IN THE FILE.

Detailed applications of this simple principle can yield complex responses of the type shown in an example from Intellect (Figure 3).

The preceding examples illustrate the effects of the user interface of the radical shift in language processor design from a procedural to a semantic orientation.

Semantic processing is supported by various AI techniques that parse natural language queries, that resolve ambiguities either through internal logic or counterquery and that can derive explicit meanings from implicit expressions through contextual references.

The current limits of natural language processors are best expressed by this final example from Intellect.

(User)  
TO BE OR NOT TO BE, THAT IS THE QUESTION.  
(Intellect)  
SORRY, I DON'T UNDERSTAND  
NEXT REQUEST.

## Product Data

Following is a nuts-and-bolts configuration/capabilities/pricing summary of Intellect and English.

## Artificial Intelligence Intellect

Artificial Intelligence Corp.  
200 Fifth Ave.  
Waltham, Mass. 02254

AIC, founded in 1975, introduced Intellect commercially in 1981. AIC

Figure 3. Ambiguities Resolved Simply

## DOS/VSE and CICS/VS Frustration?

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BIM-POOL — Prints output in POWER/VSSE spooling queue on local or remote 3270 terminal printers. (Received ICF Million Dollar Award 1982)

BIM-POOL — On-line to Batch Print Spooling. Print data passed from

CICS application programs into the POWER spooling queue.

BIM-ODS — Comprehensive problem analysis and display of

operational CICS system.

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BIMSWAP — Switch local 3270 BITM terminals between multiple CICS

partitions without special hardware or additional ports.

BIMCMPS — CICS 3270 data compression system. Reduces response time

for remote terminals significantly. Available for OS/VS1 and MVS also.

BIMF3270 — Comprehensive CRT screen image print facility. Copy to

terminal printers or spool queue for system printer.

BIMSERV — On-line display of library directories and entries. VSAM Catalog

entries, ask VTDC's, etc.

BIMDSLOG — Compile Message File display. Used by computer operations

and programmers.

BIMMONTH — DOS/VSE System Status, Performance Measurement, and

POWER Outage history.

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# How are minis and small business systems weathering the micro storm?



Turn to *Computerworld's* September 26th Special Report and get the whole story.

How are 16-bit minis doing in a 32-bit world? How are they stacking up against the new mainframes? Against the multi-user micros? Can they survive being squeezed from both ends of the hardware spectrum? How do mini-based systems stand up against micro-based small business systems?

If these are some of the questions you're asking about minis and small business systems, then *Computerworld's* Special Report, "Minicomputers and Small Business Systems: Weathering the Micro Storm" is just what you've been waiting for. You'll get a full description of the evolution of minicomputer technology right up to state-of-the-art, and a discussion of how minicomputer manufacturers are fighting back against the price and performance offered by the manufacturers of multi-user micros.

You'll read why the 16-bit machine isn't dead — why it's still a viable product. You'll get a clear definition of the differences between minis, micros, and between minicomputer-based and microcomputer-based small business systems. You'll get a comparison between minis and the new, smaller mainframes. And, you'll get application stories and tutorials that put the whole market in perspective.

This Special Report will have articles designed to help you decide not only *what* but *how* to buy. You'll read articles that evaluate the benchmark studies out there so you can judge the tests and performance ratings for yourself.

And — to give you the complete picture — you'll get a good look at the other side of the market with a rundown of the benefits to be gained from using a multi-user micro in place of a mini.

With the ever-increasing number of systems to choose from, each day you delay in making a purchase decision means there are more systems to investigate. This September 26th Special Report is just what you need to clear up the confusion that you're faced with when deciding on the best system to meet your needs.

And if you sell to buyers of minis and small business systems, this is where you'll find your best prospects on September 26th — reading *Computerworld's* Special Report on minis and small business systems. Will the information they get be complete without news of your products? Ad close for this Special Report is September 9th.

Contact your local sales representative at one of the offices listed below or call Don Fagan, Vice President, Sales at (617) 879-0700.



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## IN DEPTH

reports more than 100 installations of Intellect as of October 1982. Intellect runs only on IBM 370-class computers under OS/VS2 (MVS), DOS/VS or VM/370. It interfaces with CICS, TSO, CMS and Software AG's Complete. Current versions (Series 200) operate with AI's Derived File Access Method (DFAM), IBM's Vsam or SQL/DS and Software AG's Adabas. It also interfaces with the Presentation Graphics Feature of IBM's Graphical Data Display Manager for graphics

**'Artificial Intelligence Corp. has developed customized versions of Intellect for several vendors who market Intellect under different names.'**

interpretations of query results. AIC has developed customized versions of Intellect for several vendors who market Intellect under dif-

ferent names: Cullinet Software, Inc. (OLE), Information Science (GRS Executive), Management Decision Systems (ECI) and Honeywell, Inc. Be-

ginning this month, IBM will offer Intellect for its DOS/VSE, MVS and VM systems.

Various data processing capabilities are built into Intellect to permit queried information to be manipulated before presentation. Data processing capabilities include statistical (min/max/range/total), counting, correlation, comparisons, totaling/subtotaling, percentage and ratio functions. Data security capabilities consist of password protection at the file, record and field levels.

The Intellect license can be acquired for a one-time fee of \$69,500.

**MPG English**  
Mathematica Products Group, Inc.  
P.O. Box 2392  
Princeton, N.J. 08540

MPG English was announced May 16 as an integrated adjunct to the MPG Ramis II DBMS. It is scheduled to be released to test sites in October and released formally during the first quarter of 1984.

In addition to Ramis II, English will also interface with sequential, Isam and Vsam files, with IBM's IMS and DL/I and with Adabas, Cincom Systems, Inc.'s Total and Cullinet's IDMS. English can accommodate both natural-language queries and standard Ramis II Report language. Communications, data processing, security and other capabilities are derived from the DBMS host system.

The English license can be acquired for an introductory one-time fee of \$12,000 to \$24,000 (depending on the host CPU performance level) until Sept. 30.

**About the Author**

Vincent C. Rauzino is new product development manager for Data Decisions. The material in this article is based on information in Software, a monthly updated information service available from Data Decisions, 30 Bruce Road, Cherry Hill, N.J. 08034.

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# System 85 Targets Leading-Edge Users: NBI

By Katherine Hafner

CW Staff

NEW YORK — AT&T Information Systems, Inc., formerly American Bell, Inc., designed its Dimension/System 85 with an eye toward "leading-edge customers who needed more features than offered on the analog Dimension," according to a product analysis released recently by Northern Business Information, Inc. here.

According to the analysis, the System 85, which was announced in January and enhanced in late June [CW, July 4] to accommodate up to 7,000 stations in a single location, has a "Herculean mission."

The new voice/data private branch exchange (PBX) system must halt the erosions of Western Electric's PBX market share, protect the Bell system PBX base from interconnect competition and launch AT&T Information Systems into

"AT&T has a choice either to replace recently installed Dimensions or go after the growth market. Because the growth market is not as promising as it once was, AT&T has begun a new migration, moving users from Dimension to System 85."

office automation markets.

As if that weren't enough of a task, the System 85 must "do all this while AT&T is being forced to divest the 22 telephone operating companies of the Bell system, once the backbone of AT&T and the only market for PBXs made by its Western Electric manufacturing subsidiary," the report continued.

Without the solid base of AT&T to

rely on, the report claimed, "launching [AT&T Information Systems]... is like trying to build a castle on quicksand."

The System 85 Release 2 is comprised of a 301CC processor, which means that Release 1, which uses a 301C 16-bit processor, cannot be upgraded to the enhanced version. Nevertheless, AT&T is hoping to overcome this problem by providing an "upgrade pricing policy" to ease the transition from Release 1 to Release 2.

The System 85 was designed to take the place of Dimension in AT&T's migration of large PBXs. The system is targeted at the data communications, office automation and building management markets, as well as the traditional PBX voice-switching clientele.

Release 2, according to the study, provides potential users with more attractive technological features, a T-1 in-

(Continued on Page 58)

## Prices Hiked On Visual 300, Visual 330 CRTs

TEWKSBURY, Mass. — Visual Technology, Inc. recently announced price increases for the Visual 300 and Visual 330 display terminals.

Effective immediately, the suggested list price for both products is \$995, according to the vendor.

The 300 terminal is compatible with ANSI X3.64 and with the Digital Equipment Corp. VT100 protocol, according to the vendor. The 330 is said to be compatible with Data General Corp.'s D100/200 and emulates DEC's VT32. Hazeltel Corp.'s 1500 and Lear Siegler, Inc.'s ADM3A.

More information is available from Visual Technology, 540 Main St., Tewksbury, Mass. 01876.

## Sage Data Systems Linked To IBM Personal Computer

PRINCETON, N.J. — A communications, file transfer, distributed data base and business graphics package for the IBM Personal Computer is available for all Sage Data, Inc. time-sharing users and in-house Sage System installations. Sage Data has announced.

SagePC users can communicate and transfer files among the Sage Data time-sharing system, other public data services, in-house Sage System installations and IBM Personal Computers, the vendor said.

## NWSA Ties IBM Micro to Intel

SPOKANE, Wash. — A software system for communications between IBM Personal Computers and Intel Corp.'s Microprocessor Development System (MDS) has been announced by Northwest Software Associates (NWSA).

Xferc consists of a "master package" 5¼-in. disk for the IBM Personal Computer and a "slave package" 8-in. disk for the Intel MDS, NWSA said. The programs reportedly allow offloading from the Intel system to the IBM Personal Computer or IBM Personal Computer XT through a

## Public Network Access Service Designed for IBM 3270 Users

VIENNA, Va. — GTE Telenet Communications Corp. has announced the availability of a public network access service for users of IBM 3270 and compatible host computers and data terminals.

The 3270 Dedicated Access Facility (DAF) reportedly permits direct leased-line connections between 3270 cluster controllers or computer systems and the Telenet public packet-switching network, according to a spokesman for GTE Telenet Communications.

DAF reportedly includes all network management functions.

### Dedicated Transmission Line

The service is accomplished by installing a dedicated transmission line between each cluster controller or host computer and the nearest Telenet network node, ac-

cording to the vendor.

The price for a terminal installation at 4,800 bit/sec is \$1,000 and \$700 monthly. For 9,600 bit/sec transmission, the price is \$1,000 for the terminal installation and \$1,200 monthly, the vendor spokesman said.

Additional information can be obtained from GTE Telenet Communications, which is located at 8229 Boone Blvd., Vienna, Va. 22180.

## Fiber-Optic System Offers Multiplexing In System Design

SANTA CLARA, Calif. — Quantel Corp. has introduced a broadband multichannel fiber-optic transmission system said to offer economical wavelength division multiplexing in a system-oriented design.

The Model 1400 fiber-optic transmission system incorporates the vendor's 1401 optical transmitter, 1402 optical receiver and Modelis 1504-09 and 1504-10 power frame/optical multiplexer and demultiplexer. The system is capable of transmitting on up to four 140M bit/sec channels on a single fiber, according to a vendor spokesman.

The transmitter also features a wavelength- and intensity-stabilized diode laser and a digital scrambler that reportedly provides proper line coding, as well as necessary drive and protective circuits for the laser diode.

The Model 1400's optical receiver features a wavelength-selective detector said to employ an avalanche photodiode supplemented by a broadband amplifier.

The system is priced at \$27,800, or \$6,950 per channel, which includes power supply racks, according to the spokesman.

Additional information on the fiber-optic transmission system is available from Quantel, located at 3350 Scott Blvd., Building 15, Santa Clara, Calif. 95051.

Information can reportedly be downloaded in a user-selected format compatible with popular microcomputer software packages.

The package is available to all Sage System users for a one-time perpetual license fee of \$250 per Personal Computer; in-house Sage System users may license the communications package for a fee of \$3,000 per CPU. Further information is available from Sage Data, 104 Carnegie Center, Princeton, N.J. 08540.

9,600 bit/sec RS-232C communications line.

The software requires the IBM to have 48K bytes of memory and Microsoft, Inc.'s MS-DOS or IBM PC-DOS Version 1.1 or a later revision; the Intel system must have 64K bytes of memory and Intel's late-II Version 4.1 or a later revision.

Suggested retail price is \$200. More information is available from Richard Hartman, Northwest Software Associates, Suite Three, 12411 E. Mansfield, Spokane, Wash. 99216.

COMMUNICATIONS



# At last, help for companies wrestling with the problems created by personal computers.

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The cost-efficient microSystem 6/10 is a multi-personality workstation that provides an impressive range of functions—including networking.

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nal emulator. What's more, power and flexibility make the microSystem 6/10 perfect for adaptation to industry-specific applications.

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Best of all, perhaps, the microSystem 6/10 will be an immediate hit with employees wed to their PCs. Because it accepts popular software packages based on CP/M-86\* and MS-DOS,\* chances are your people won't have to give up their favorite programs.

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For more information, call 800-328-5111 ext. 2706 (in Minnesota call collect 612-870-2142) or write to the Honeywell Inquiry Center, 200 Smith Street (MS 440), Waltham, Massachusetts 02154.

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## Fits IBM Controllers

# Communications Unit Bows

HYANNIS, Mass. — A fiber-optic or coaxial communications system for IBM 3271 and 3272 control units and IBM 3274 controllers with Type B terminal adapters has been announced by Fibronics International, Inc.

The FM-1632 Cable Bendit system communicates with up to 32 display stations or printers and allows all IBM 3277, 3286 and 3288 devices to be located up to 1.9 miles from the control unit, the vendor said. Two different controllers can reportedly be run simultaneously over one cable.

Up to four drops are permitted with a coaxial system and up to two drops with a fiber-optic system. Fi-

bronics said.

Delivery takes four to six weeks, and prices start at \$3,000 from Fibronics International, 218 W. Main St., Hyannis, Mass. 02601.

## Mux Boasts

# 32 Digital I/Os For Data Control

SOMERVILLE, Mass. — A remote multiplexer for position measurement over long distances said to provide up to 32 digital I/Os for distributed process control and data retrieval has been announced by Buckminster Corp.

The C-1020 multiplexer plugs directly into the 120V ac power main and reportedly works with any host computer, according to the vendor. Internal buffering is said to enable the host computer to read clean position data at any time even when encoders on the device being monitored are moving and counters are changing.

The company said that several C-1020 units can be coordinated in a remote multiplexer network. In this configuration, each remote station is connected via a full duplex serial link to the centrally located host computer that is used to collect the data.

The range of applications suitable for the C-1020 Remote Multiplexer includes inspection of nuclear power plants, mine shafts, oil rigs and other potentially dangerous sites. The multiplexer can also be used in undersea study and salvage operations.

The single unit price of the C-1020 unit is \$4,800 from Buckminster at 99 Highland Ave., Somerville, Mass. 02143.

## Controller Offered for Use With Multibus

GOLDEN, Colo. — A multiline asynchronous controller said to be designed for use in any Intel Corp. Multibus system has been announced by Unidot, Inc.

As a Multibus component board, the UB2012 Advance Multiline Asynchronous Controller is intended to support up to eight asynchronous terminals or lines, according to Unidot.

It includes a National Semiconductor Corp. NS16008 microprocessor, 64K bytes of buffer memory, 16K bytes of programmable read-only memory and eight duplex lines with programmable bit/sec rates up to 38,400 bit/sec, Unidot said.

Reportedly, a full understanding of Unix protocols is built in, and the buffer memory can be used to download special protocols in the event that future requirements change.

Shipments begin this month, and the single-board price is \$1,995 with interface panels starting at \$210. More information is available from Unidot, Suite 231, 602 Park Point Drive, Golden, Colo. 80401.



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## Digital Marketing Offers Micro Link II

WALNUT CREEK, Calif. — Digital Marketing Corp. has introduced the Micro Link II, a communications package said to combine menu design and versatility.

The Micro Link II package reportedly connects computers to information services, time-sharing computers and other microcomputers, while transferring files with error correction.

Features of the package

include object code, autodial numbers with modems and SAVE program commands.

For use on systems run-

ning under Digital Research, Inc.'s CP/M and CP/M 86 operating systems and Microsoft, Inc.'s MS-DOS oper-

ating system, Micro Link II is priced at \$99 from the vendor at 2363 Boulevard Circle, Walnut Creek, Calif. 94595.

## Modem Powered by Phone Line

HUNTSVILLE, Ala. — A 1,200 bit/sec. modem powered entirely by telephone line has been introduced by Universal Data Systems, Inc., a subsidiary of

Motorola, Inc.'s Information Systems Group.

The UDS 212LP is a low-profile unit that weighs 15 oz., according to Universal Data Systems.

It is available for a suggested price of \$445. Further information is available from Universal Data Systems, 3000 Bradford Drive, Huntsville, Ala. 35805.

## Prime Gets Autobaud Plus

WOOD DALE, Ill. — Computronics, Inc. has announced an enhanced version of its Autobaud product for Prime Computer, Inc. systems.

Autobaud Plus, the company said, is available for users of Prime's Primos Version 19.1 and later revisions. The monitor package supports Prime 50 series computers.

The package price for single computer systems is \$600 from Computronics, located at 130 N. Ash, Wood Dale, Ill. 60191.

## Analysis Examines System 85

(Continued from Page 53)  
terface, a distributed communications system (DCS), additional data management functions such as modem pooling and computer host access ports designed to look like trunks and other network management features. Also, a voice messaging system is expected to be available for Release 2 in the near future.

Now, the report claims, AT&T has a choice either to replace recently installed Dimensions or go after the growth market. Because the growth market is not as promising as it once was, AT&T has begun a new migration, moving users from Dimension to System 85.

More significantly, perhaps, according to the analysis, is the fact that the System 85 represents more than just a PEX to AT&T, because a "large base of 85s is a potentially huge after-market for office equipment."

System 85 is also designed to serve as a local-area network of sorts, with such functions as electronic mail and terminal emulation, as well as environmental control and building security management. The system can integrate voice and data at the terminal into a single stream, which is sorted out at the switch.

"[AT&T Information Systems] wants to become a full line 'office automation' supplier... to sell itself as a one-stop office automation supplier," the report noted. "Other companies sell similar concepts, but generally place more emphasis on systems integration rather than integrated systems."

Additional information on the report is available from Northern Business Information, located at 66 W. Broadway, New York, N.Y. 10007.

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## Switching Device Debuts, Boasts 3270 Compatibility

BOULDER, Colo. — An IBM 3270-compatible passive switching device has been announced by Systems Concepts of Colorado, Inc.

The S345-1 allows terminal users to switch manually a single terminal between two data networks, according to Systems Concepts. A 3270 device can access two separate computer systems or, in critical applications, one system via two separate communications paths, a vendor spokesman said.

The switch is designed for terminal side-mounting and displays black and orange switch faces indicating which line is in use.

The switch is priced at \$27.50. Further information is available from Systems Concepts of Colorado, P.O. Box 3171, Boulder, Colo. 80507.

## Datastream Unveils Display Station

SANTA CLARA, Calif. — Datastream Communications, Inc. has announced a display station said to be compatible with the vendor's IBM 3270, IBM protocol Binary Synchronous Communications and Systems Network Architecture remote cluster controllers.

The Model 178 display station is said to be compatible with IBM 3178 and Digital Equipment Corp. VT32 terminals. The 178 keyboard is said

## Modular Packet Unit Bows

MOUNTAIN VIEW, Calif. — A modular packet communications unit said to produce lower costs in local-area network connection and provide aggregate data throughput rates up to 28K bit/sec has been introduced by Sytek, Inc.

The Localnet 20/220 S-Mux offers up to 32 ports in a single chassis. Users can add, incrementally, two-port modular packet communication processors (PCP), Sytek said.

The chassis includes a frequency agile broadband modem and a common power supply, according to the company.

Each module reportedly employs a digital arbitration scheme for modem sharing, enhancing carrier sense multiple access with a collision detection management mechanism, which Sytek said provides a low packet collision rate on the network. Users can configure each port to operate at data rates between 75K and 19,200K bit/sec, with the aggregate throughput per PCP in excess of 28K bit/sec, according to Sytek.

The device is priced at \$345 per port fully configured. Further information is available from Sytek at 1225 Charleston Road, Mountain View, Calif. 94043.

The device is priced at \$345 per port fully configured. Further information is available from Sytek at 1225 Charleston Road, Mountain View, Calif. 94043.

## Carnegie Press Issues Update Of Protocols

MADISON, N.J. — Carnegie Press has announced the 1983 supplement and update to its "Standards & Protocols for Communications" publication.

The 107-page supplement was written to provide the reader with the latest information and recent developments in communication network protocols, a spokesman for the vendor said.

Items covered include: additional options to IBM's High-Level Data Link Control (HDLC) classes of procedure; differences between HDLC and IBM's Synchronous Data Link Control; expanded coverage of network protocols; emerging internet protocols; expanded coverage of packet assembly/disassembly; status of protocols at higher layers and the emergence of local-area networks as a key element in network planning, according to the spokesman for the vendor said.

The 1983 supplement is available from Carnegie Press for \$19.95 plus \$2.00 for shipping. Carnegie Press is located at 100 Kings Road, Madison, N.J. 07940.

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Because of the rapid rate of change of the technology, strategic planning is needed. This should create an integrated view of future resources and a plan for getting from here to there in easy-to-implement stages.

The spread of minicomputers, networks, distributed processing, end-user software, office-of-the-future technology, and data base systems all make it absolutely vital to have a corporate strategy for their evolution. The strategy must be oriented to achieving major increases in executive productivity and a major speeding up of application development.

Strategy and strategic planning methodologies are discussed.

Major management changes may be needed to achieve the synthesis of office-of-the-future systems, DP, and corporate telecommunications.

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# KNOWLEDGE IS POWER.

## Handles Multiple CPUs Elxsi 64-Bit System Targets Scientists

By Ed Scannell

SAN JOSE, Calif. — Elxsi International recently started shipment of a 64-bit tightly coupled multiprocessor system capable of processing between four million and 40 million instructions per second (Mips) that will be targeted at the scientific marketplace.

In its single-processor configuration, the Elxsi 64 processes 4 Mips and will be marketed as an upgrade for 32-bit users running out of CPU horsepower, according to President Joe Rizzi. With two processors, the system processes 8 Mips and will be pitted against the offerings of traditional mainframe makers, he said. With between three and 10 processors, the sys-

tem will compete with the supercomputers made by Cray Research, Inc. and Control Data Corp.

"The idea from the start was to architect a computer that can handle multiple CPUs efficiently so that when you add a third, fourth or 10th, you are still talking about linear improvements in terms of throughput," Rizzi related.

The single-processor version of the system contains 4M bytes of internal memory and will be priced at approximately \$500,000. A more typical configuration will cost approximately \$2 million, with the high-end (10 processors) model capable of storing as much as 200M bytes and "getting up into the \$4 million plus range," Rizzi said.

The system communicates via the Elxsi-developed Gigabus, which transfers data at 320M bytes/sec. The Gigabus allows for the attachment of up to 32 identical modules that can be mixed and matched to provide the performance level to meet the individual user's needs, Rizzi noted.

"What is interesting about the machine from a structural standpoint is it is quite modular. There are only 10 different printed-circuit boards in the entire system," Rizzi explained. "And with those 10 building blocks, we can build a 5500,000 system or a \$5 million system," he said.

### Three Systems Delivered

The company has already delivered three of the systems to the field — two in the U.S. and the other to Singapore. Rizzi said he expects to sell 50 systems at an average cost of \$1 million throughout the next year.

"There is a tremendous gap right now between the supermini and the higher end mainframes and supercomputers, and there aren't a lot of new and interesting products to fill that gap. We look at this machine as a way of taking care of [supermini] computer users' needs for the next 10 years," he asserted.

Because of the difficulty in developing  
(Continued on Page 64)

## Mostek Introduces Chip With 256K-Byte Dynamic RAM

CARROLLTON, Texas — United Technologies Corp.'s Mostek Corp. has announced what is reportedly the first 256K-byte dynamic random-access memory (RAM) component on the market with 32K-byte by 8K-byte architecture.

The MK4856 was designed for the fastest growing segment of the memory users market — small microprocessor-based systems that do not require large amounts of solid-state memory. The total 256K-byte dynamic RAM market has the potential to be even larger than the 64K-byte dynamic RAM market, which has 1983 projected sales of \$1 million, the vendor said.

Mostek believes the 256K-byte dynamic RAM market will be large enough to support several alternate memory organizations.

The Mostek chip reportedly uses the latest Mostek scaled Nmos process technology to produce high density with access times as fast as 100 nsec. This new process technology, known as the LD<sup>2</sup> process, minimizes the transistor's short channel effects. The MK4856 is fabricated with double-level polysil-

con and double-level metal interconnection.

Two features of the MK4856 are said to make the use of dynamic RAMs in a small system especially practical. The nonmultiplexed addresses eliminate system logic and simplify timing, while the integrated refresh counter further reduces the amount of external overhead logic needed in a system. Compared to using 1K memories, the Mostek chip enables the small system designer to make a simpler, less costly system, the vendor claimed.

The MK4856 is available in a standard 600-mil, 28-pin package using a pinout compatible with other Mostek Bytewise devices.

The MK4856 will also be available with 100 nsec, 120 nsec and 150 nsec access times in plastic dual in-line package (DIP) integrated circuits (N) leadless hermetic chip carrier (E) or ceramic DIP (P) packages, according to the vendor.

Currently, only the N package 150 nsec version is out (order No. MK4856-150), and it costs \$100 in quantities of 100. Mostek is located at 1215 W. Crosby Road, Carrollton, Texas 75006.

## Infoscrite Cuts Printer Prices

SANTA ANA, Calif. — Infoscrite, Inc. has reduced the price of three of its dot matrix printers.

The Infoscrite 500, an entry-level printer that prints up to 150 char./sec. has been reduced from \$1,530 to \$1,345. The company's 200 char./sec. general-business printer, the Infoscrite 1000, has dropped from \$1,895 to \$1,545, while the 200 char./sec. Model 1100 now costs \$1,795, down from \$2,295.

The company also announced that the Infoscrite 1200, which offers multifunction printing and high-density graphics in up to eight colors, has begun shipping and costs \$2,495. Infoscrite is located at 2720 S. Croddy Way, Santa Ana, Calif. 92704.

## Direct Micro Exchanges Info With HP 3000s

SANTA CLARA, Calif. — Direct, Inc. has unveiled a 16-bit microcomputer capable of exchanging information with Hewlett-Packard Co.'s HP 3000 minicomputer, as well as running the same software used by IBM's Personal Computer.

The Integrated Personal Business Computer (IPBC) 1625 contains an Intel Corp. 8088 microprocessor, 128K bytes of main memory, 64K bytes of terminal memory, two 5¼-in. floppy disks storing 320K bytes each, two RS-232-C asynchronous communications ports, a high-resolution screen and is compatible with Microsoft, Inc.'s MS-DOS operating system.

Direct also took the wraps off a Digital Equipment Corp. VT100-compatible system called the IPBC 1631 that also runs Personal Computer-compatible software. The 1631 employs a 7.7MHz version of the 8088 chip, which is reportedly twice as fast as the version used in the Personal Computer, has 128K bytes of internal memory,

two RS-232 ports that can be used for host or printer interconnection and a high-resolution screen.

Options for the system include an integral hard disk that supplies up to 20M bytes of local on-line storage, a Bell 212A modem, Tektronix, Inc. Plot 10 graphics capabilities, an additional 128K bytes of memory and two additional communications ports compatible with several protocols, including IBM's Systems Network Architecture.

Users of the vendor's Series 1000 can upgrade their systems to both the 1625 and 1631, a spokesman said.

The IPBC systems were designed to bridge the computing needs of personal computer users unable to access management information systems (MIS) and terminal users that do not have local processing abilities.

"The requirement for local personal productivity enhancement at the terminal

and at the [personal computer] level is going to increase," said Stephen Auditore, Direct's vice-president of corporate planning.

"As greater power is required, users face the decision of continuing in the past, with either a personal business computer and a discrete display terminal or buying an integrated personal business computer," he said.

Direct defines an IPBC as a personal computer-like device allowing users to run local applications, process MIS resident applications, make data transfers, perform applications-specific data transfers and balance local and host resident applications.

Both systems are priced at \$3,995 in single quantities; volume discounts are available.

More information is available from Direct, which is located at 4201 Burton Drive, Santa Clara, Calif. 95054.

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## Subsystems Unwrapped, Incorporate Winnie Drive

MONROVIA, Calif. — Kennedy Co. has announced two peripheral subsystems that incorporate either a 40M-byte or 80M-byte 8-in. Winchester disk drive and a 1/4-in. cartridge tape for backup into an integrated 19-in. rack-mountable chassis.

The tape drive interface is the vendor's Picobus embedded formatter or an intelligent adapter that lets the cartridge emulate a nine-track, reel-to-reel transport with no operating system software changes, the vendor said. The disk interface is either a Storage Module Drive, Ansi X319.3/143 or Picobus.

The Model 8055 and 4055 peripheral subsystems are based on Ken-

edy's Model 7380 and 7340 Winchester disk drives with 82.9M and 41.4M bytes of unformatted capacity, respectively. Both drives reportedly have a recording density of 9,006 bit/in. and a data transfer rate of 1,209K byte/sec. Other features include Kennedy's Positrac rotary actuator for fast head positioning and precise track following; minimum seek time of 6 msec, with average and maximum seek times of 30 msec and 55 msec, respectively; and a 3,600 rpm spindle speed gives an average 8.33-msec rotational delay.

The 1/4-in. cartridge tape transport, the Model 6455, is said to be a four-track device, using serpentine recording. It is equipped with an embedded formatter that controls drive functions and performs the data formatting and error checking. Host interface is the Picobus.

Also available is an adapter board that reportedly converts the bus interface to an industry-standard 1/4-in. tape transport interface. This adapter lets the 6455 emulate a nine-track, reel-to-reel tape transport, requiring no software changes to the operating system.

A 200W switching supply provides  $\pm 5V$ ,  $\pm 12V$  and  $24V$  for the Winchester drive, cartridge transport and associated electronics. Input voltage is from 110V to 240V, 47Hz to 63Hz.

The Model 8055 peripheral subsystem, with the 80M-byte Winchester drive and tape, sells for \$6,600. The 40M-byte Model 4055 sells for \$5,800. More information is available from Kennedy, which is located at 1600 Shamrock Ave., Monrovia, Calif. 91016.

## Elxsi System Said to Process Up to 40 Mips

(Continued from Page 63)

its multiprocessor architecture, the 6400 is not compatible with IBM mainframes or superminis made by the major players such as Digital Equipment Corp. and Data General Corp.

However, Rizzi said the company intends to make the system compatible with Unix.

### Not Worried

The prospect of not being able to run IBM does not worry Rizzi at this point.

"We don't need to be a \$5 billion company next year," he said.

"What we are trying to do is provide the high-end supermini computer people (mostly engineers) with a sane and sensible approach to gain expansion power," according to Rizzi.

According to Rizzi, the 6400 took \$30 million and 4½ years to develop.

The company was founded in 1979 by Hewlett-Packard Co. DSC and Amadahi Corp. alumni, he added.

More information about the system is available from Elxsi, which is located at 234 Lundy Place, San Jose, Calif. 95131.

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# Two Pick-Compatible 68000-Based Micros Out

LOS ANGELES — Bantam Computers, Inc. has unwrapped two Motorola, Inc. 68000-based microcomputers for business applications that

use Pick Systems' Pick operating system.

The Bantam 002 series is made up of two models, the 002/7 and the 002/15. De-

pending upon the configuration chosen, suggested retail price for the 002/7 starts at \$13,695 and at \$24,395 for the 002/15.

The software includes a multiuser, virtual memory operating system that incorporates a relational data base management system based on the Pick operating system.

Among Bantam's extensions to the standard Pick

system are enhanced data communications, a user-friendly facility known as Bantam Shell, applications software generators, word processing, financial spreadsheet and business graphics.

The Bantam 002/7 desktop model is offered in a basic configuration that includes 128K bytes of random-access memory (RAM); a 10M-byte, formatted 5¼-in. Winchester disk; 20M-byte, ¼-in. car-

tridge tape; and three serial RS-232 ports supporting transmission rates up to 19.2K byte/sec.

The 002/15 floor model has a basic configuration of 128K bytes of RAM; a 30M-byte, formatted 8-in. Winchester disk; a 20M-byte, ¼-in. cartridge tape; and 11 serial RS-232 ports.

Bantam is located at Suite 1200, 6033 W. Century Blvd., Los Angeles, Calif. 90045.

## Cadd System Offered For Architectural Use

SANTA CLARA, Calif. — A computer-aided, drafting/design (Cadd) system said to aid architectural drawing has been introduced by Data Design Logic Systems, Inc. (DDLs).

The CAD-Master 400 reportedly uses proprietary software and a microcomputer to permit architects, draftsmen, engineers and designers to sit at a keyboard and create complex, multi-color drawings in a matter of hours. It allows corrections, additions and deletions to a finished drawing by keyboard entry.

The system does not require digitizing before a drawing can be reproduced, as conventional architectural Cadd systems do, the vendor said. Standard images and symbols can be created.

Designed as an L-shaped workstation, the CAD-Master 400 integrates an IBM Personal Computer-XT with 384K bytes of random-access memory and DDLs' Model 3200 high-resolution, intelligent pen plotter. An IBM color monitor, a 10M-byte Winchester disk drive, a 5¼-in. floppy disk drive and joystick complete the configuration.

The system costs less than \$30,000, or it can be leased for \$650/mo from DDLs, which is located at 4800 Pat-

rick Henry Drive, Santa Clara, Calif. 95054.

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## Datafile Interfaces With Sanyo

PHOENIX — Thought Works, Inc. has announced the availability of its Datafile series of hard disk subsystems designed to operate as mass storage media for Sanyo Business Corp.'s recently introduced microcomputers.

The 5M-, 10M- and 20M-byte-Datafile hard disks interface with Sanyo's MBC-1100 series small business micro, the MBC-1200 series 8-bit micro and the MBC-4000 high-capacity, 16-bit "creative" computer.

Prices include \$2,494 for the 5M-byte Model DF-105, \$2,995 for the 10M-byte Model DF-110 and \$4,495 for the 20M-byte Model DF-120 from Thought Works, 3532 W. Thomas Road, Phoenix, Ariz. 85019.

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# If you have a Personal Computer PCI speaks your language.

**T**he PCI 1076 protocol converter from Protocol Computers, Inc. can support your Personal Computer - Apple, Cannon, DEC, Hewlett Packard, IBM-PC, Kaypro, NEC, Osborne, Sanyo, Sony, Tandy/Radio Shack, MOD, Xerox, etc, etc, etc - in IBM's SNA/SDLC world.

Simply, conveniently, economically, the PCI 1076 makes IBM SNA hosts talk to your Personal Computer in its own language. It converts the Personal Computer's ASCII code to appear as the SNA/SDLC protocol used by IBM hosts, and vice versa. But before showing you how we support Personal Computers in IBM's world, here's how to support your own Personal Computer vocabulary.

## GLOSSARY:

**ASCII** (American Standard Code for Information Interchange) The language spoken by most Personal Computers.


**ASYNCHRONOUS** Low speed, low cost modems used with most Personal Computers.

**BSC** Some Personal Computers support, via existing programs, the BSC (Bisync) protocol. See PCI 71B/SNA for SNA-compatibility.

**CoaxFACE** Exclusive PCI converter allows you to drive Personal Computer using standard coax cable, without re-cabling with RS-232C.

**FULL SCREEN** The ability to modify an entire CRT screen of data without interruption of host.

**MODEMS** Provide terminal/CPU digital interface into an analog signal for the phone lines.



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**PCI** (Protocol Computers, Inc.). We're making the non-IBM world IBM-compatible.

**SDLC** (Synchronous Data Link Control). Expeditious for moving data in IBM systems.

**SNA** (System Network Architecture). Network for moving data in IBM systems.

**SNA/SDLC** Non-compatible with Personal Computers' ASCII language (without PCI).

**SYNCHRONOUS** High speed, high cost communications device for communications with host computers.

**PCI 71B/SNA** When using Bisync running on the Personal Computer, PCI 71B/SNA protocol converter makes it SNA-compatible.

**PCI 78 Networker**™ Keystroke for keystroke 3278 keyboard compatible terminal.

**PCI 1076** Makes Personal Computers function as 3278s.

**3274/76** IBM controllers which support 3278, 3287 devices in an SNA/SDLC network.

**3278/3287** IBM's CRT; IBM's printer.

## HOW PCI SPEAKS THEIR LANGUAGE.

The PCI 1076 facilitates communication to and from the Personal Computer with absolutely no change in host application programs. When you use your Personal Computer's display and keyboard, they appear and function as 3278s.

If you need printed reports, PCI's exclusive "Dynamic Printer Assignment" feature addresses the Personal Computer's printer as if it were a 3287 over a single communi-

cation line. And, the PCI 1076 allows the Personal Computer's diskette to store data from, and send information to the host system.

## PERSONAL CONNECTIONS.

The PCI 1076 gives you tremendous flexibility for those locations with PCs.

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- You can connect to existing 2-wire twisted pair cables installing the Personal Computer at the end of a point-to-point link with the use of our asynchronous line devices.

- Or, you can take your Personal Computer home, on the road, wherever. To make an asynchronous ASCII dial-in connection, simply use low cost modems and acoustic couplers.

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The PCI 1076 has a graphics terminal interface that lets you use ASCII graphics terminals on your SNA/SDLC network as 3278s. With our PaperCRT,™ ASCII hard copy keyboard terminals have all the flexibility of 3278s, including capability to full screen edit on paper with portable hard copy terminals from anywhere in the world - just pick up the phone.

If you'd like to hear more, our PCI 1076 speaks for itself. Call PCI today for a demonstration unit.

## ALSO AVAILABLE:

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**75B/SNA:** BSC 3275 to SNA/SDLC 3276 emulation.

**1071:** ASCII to BSC 3270 emulation.

**738X:** SNA/SDLC through X.25 connection interface.

**1076X:** ASCII to 3270 SNA/SDLC through X.25 networks. (With PAD included.)

**Videotex 67:** SNA/SDLC to Videotex protocol conversion.

**PCI 51 Networker:** Keystroke for keystroke 5251 keyboard compatible ASCII CRT.

**PCI 7887 Plus:** IBM-PC software package for 3270 emulation.

**PCI 5156 Plus:** IBM-PC software package for Sys 34/36/38 emulation.

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## Fits Apple II, Apple III Micros Color Plotter Announced for Apple

CUPERTINO, Calif. — Apple Computer, Inc. has unwrapped a multicolor plotter for its Apple II and Apple III personal computers capable of generating graphs and charts on either paper or overhead transparencies.

The Model 410 Apple Color Plotter is compatible with Apple Business Graphics and other graphics software designed for the Apple systems. The plotter features four color pens that can be interchanged automatically

during operation, according to the company, and its variable-width plotting bed and adjustable pinch roller mechanism permit a choice of media sizes up to 11 inches by 17 inches.

The plotter uses a standard RS-232C serial interface and will connect directly to the Apple III's built-in serial port. Connections to the Apple II, Apple II+ or Apple IIe can be made through the Apple Super Serial Interface Card.

The plotter can be purchased from Apple dealers for \$995, the company said from 10260 Sandley Drive, Cupertino, Calif. 95014.

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## S-100 Bus Multiuser System Supports Up to 16 Users

HUNTINGTON BEACH, Calif. — Multimicro Computer has introduced an S-100 bus multiuser system. Featuring up to 16 users, the Turbo-DO5-based system, which is compatible with Digital Research, Inc.'s CP/M, can be equipped with up to 450M bytes of Winchester technology memory, over 1M byte of system random-access memory, an 8-in., 1.2M-byte floppy disk, a 20-slot chassis, real-time clock and RS-232, RS-422 or Centronics parallel interfaces.

Speed is enhanced, the vendor said, by host memory mapping of the slave's memory. A tristate direct memory

access hold on the slave's processor allows instructions to be downloaded from host to slave at 571K byte/sec.

The base system, which includes 320K bytes of system memory, 16M bytes of hard disk storage and four-user capability, sells for \$9,950. Additional users are priced at \$750 from Multimicro at 9631 Netherway, Huntington Beach, Calif. 92646.

## Cardaccess 50 Out, Boasts High Security

WESTBURY, N.Y. — Continental Instruments Corp. has unveiled a single-door programmable access control system said to incorporate many features usually found only in larger access systems.

Cardaccess 50 is a high-security, on-line access control system that supplements the larger Cardaccess 100 and 250 systems. The stand-alone Cardaccess 50 unit reportedly controls access of up to 4,000 individually coded cards. All programming is performed at the card reader using the unit's own Cypher pad, eliminating the need for a separate hand-held programmer.

The system offers three user-selected access modes and uses an infrared card reader and encoded card. Cardaccess 50 costs approximately \$1,200 from Continental Instruments, 70 Hopner St., Westbury, N.Y. 11590.

## Channel Switch Series Fits IBM Mainframes

SAN RAFAEL, Calif. — A series of automatic reprogrammable CPU/channel switches for IBM 360, 370, 4300 and 30 series and compatible systems has been introduced by Switchmaster Corp.

The 580 series of switches features electronically driven channel signals and up to 200 ft of additional cable length per port. External connections and circuit

board interconnections are gold on gold and incorporate TTL circuitry throughout, the firm said.

All switches include built-in backup power supply and allow up to 10 strings of peripheral devices to be switched between CPUs and channels, according to Switchmaster. Each peripheral or string supported by the switch requires only two identical cards, and all printed-circuit cards are completely interchangeable, the company said.

The switches support all devices eligible for IBM channel attachment. Priced from \$8,000, the units are available for installation within 45 days. Additional information can be obtained from Switchmaster, Suite 7, 25 Mitchell Blvd., San Rafael, Calif. 94903.

## Vid-80 Board Expands Display of TRS-80

MURRAY, Utah — Holmes Engineering, Inc. has released a video upgrade packaged with Digital Research, Inc.'s CP/M operating system for Radio Shack's TRS-80 Model III. Also announced was the Sprinter K plug-in circuit board for Nonlinear Systems Inc.'s Kaypro II microcomputer.

The Vid-80 is said to be a plug-in, printed-circuit board that expands the Model III display to 24 80-char. lines and allows operation of the CP/M 2.2 and DOS operating systems. Most Model III operating systems and software will run in the display mode, the vendor said.

The standard CP/M 2.2 operating system has been

enhanced with 8-in. disk drive capability (only if the user's system includes a disk controller capable of 8-in. operation).

The Sprinter K is said nearly to double computer speed. The board also provides a high/low speed switch selection, auto-down for normal speed requirements and the ability to plug directly into a Zilog, Inc. 280 socket.

Vid-80 boards retail for \$279.50 each; the CP/M 2.2 operating system sells for an additional \$120. The Sprinter K costs \$99.50 plus \$5 for shipping and handling. Holmes Engineering is located at 5175 Green Pine Drive, Murray, Utah 84107.

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## Drive Fits Apple III, Supports Its Software

SCOTTS VALLEY, Calif. — Mountain Computer, Inc. has announced a hard disk drive for the Apple Computer, Inc. Apple III microcomputer. The unit supports both Apple III and Apple II software and can be used as a replacement to Apple's Profile drive.

The Apple III-compatible hard disk allows users to enter and maintain files in either Apple II or Apple III modes without additional patching. The drive also supports Apple's SOS operating system or Digital Research,

Inc.'s CP/M operating system simultaneously.

The unit is available in four storage capacities (5M-, 10M-, 15M- and 20M bytes); the drive features four user-visible partitions that act as user-definable volumes on each disk, the vendor said.

The Mountain drives cost from \$1,995 for a 5M-byte drive, \$2,495 for a 10M-byte drive, \$2,995 for a 15M-byte unit and \$3,495 for a 20M-byte configuration. Mountain Computer is located at 300 El Pueblo Road, Scotts Valley, Calif. 95066.

## Cases Designed for IBM Micros

REDONDO BEACH, Calif. — Wayne Nall Enterprises has introduced its new line, the Compac Computer Case, now available with a foam pack specifically designed for the IBM Personal Computer or Personal Computer

XT with keyboard.

The cases are constructed of high-impact plastic with a rib design for added strength. The Compac is manufactured with an accurate lid and body closure, two positive closing chrome

locks, two lid supports, continuous hinge and a padded handle.

Available with a pre-cut cubed foam pack, the Compac Computer Case's standard size is 23-in. long by 18½-in. wide by 9½-in. high; it weighs 12 lb.

The price is \$150 for an IBM Personal Computer or Personal Computer XT with keyboard-type case and \$119.50 for the IBM Monitor. Wayne Nall Enterprises is located at Suite 109, 350 The Village, Redondo Beach, Calif. 90277.

incorporated into existing programs, it is not uncommon to see System/34 response and processing time increase substantially, a spokesman for the vendor said.

The book is available for \$39.95 from Professionals Unlimited, which is located at 3951 Lantern Drive, Silver Spring, Md. 20902.

## Book Targets IBM System/34

SILVER SPRING, Md. — Professionals Unlimited has announced the publication of the IBM "System/34 How & Why Book," which illustrates programming techniques for the machine with an emphasis on improving programmer and systems productivity.

When effective programming techniques are

## IBM 3250 Gets Electronic Switch

CHEVY CHASE, Md. — Federal Data Corp. has announced the G1000 electronic switch for the IBM 3250 graphics display system.

Developed for the National Aeronautics and Space Ad-

ministration's Goddard Space Flight Center, the G1000 reportedly allows selective production of hard copy on a Sanders Associates' 770 Copier from the display images of two or more IBM

3251 display stations. Software modifications are not required, as the process is transparent to the 3250 system, the vendor said.

The G1000 costs \$7,500/unit from Federal Data, 4601 N. Park Ave., Chevy Chase, Md. 20815.

## Mostek I/O Controller Boasts Two Channels

CARROLLTON, Texas — Mostek Corp. has unveiled a dual-channel, multiprotocol I/O controller intended to enhance its Motorola, Inc. 68000-based systems.

Dubbed the Mostek

MK68564 Serial I/O (SIO), the controller reportedly features two independent full-duplex channels in a single 48-pin package. The peripheral also includes two on-board, independent, transmission-rate generators with internal crystal oscillator input that saves system cost in crystals, integrated circuits and board space, a spokesman for the vendor said.

The controller, which operates in either synchronous or asynchronous mode, contains quadruple-buffered receive data registers that permit a great deal of latency in the CPU's interrupt service routine, the spokesman explained.

In lots of 1,000, the MK68564 SIO costs \$34.05 each, Mostek said. More information is available from the vendor at 1215 W. Crosby Road, Carrollton, Texas 75006.

## Power Units Announced

TORRANCE, Calif. — KEC Electronics, Inc. has announced 100W and 130W multioutput switching power supplies for Winchester disk drive applications.

The devices are called the KS100-05, KS100-06, KS130-05 and KS130-06. Each has two 12V output outlets that offer users twice the current of conventional power supplies, making the power supplies appropriate for use with hard disk drives that require a high surge current at start-up and higher continuous current during operation.

The KS100 models cost \$188, and the KS130 line costs \$205 from the vendor at 20817 Western Ave., Torrance, Calif. 90501.

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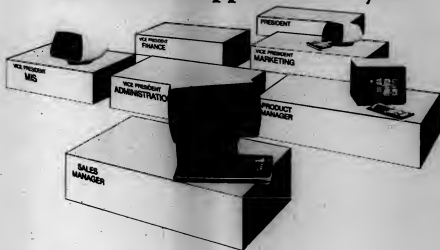
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You'll get an examination of the politics of microcomputers in organizations; a roundtable discussion by DP/MIS experts dealing with a wide range of topics relating to personal computers — from selection to implementation. And, there'll be a whole article devoted to how large companies deal with training personnel to use personal computers.

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And there'll be a special profile of an operating information center where employees are trained on the use of personal computers. You'll see how they're helped in selecting the right product for their needs and how they're aided in implementation and ongoing training. You'll also get a look at the financial ins and outs of the market, pros and cons of personal computers replacing CRTs, and... you get the idea. You're going to get a whole issue packed with news on micros you can't afford to miss.

And if you sell micros and micro products, you shouldn't miss this opportunity of having your product represented in this *Computerworld Extra!* issue that will be saved and used as a reference. The deadline for ads is October 21. To get your space reserved, call Don Fagan, Vice President Sales/Marketing at (617) 879-0700 or call your local *Computerworld* sales office, listed below.

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## Bits & Pieces

### Voice Recognition Offers Apple Voice Input Module

SAN FRANCISCO — Voice Recognition Systems is offering an Apple Computer, Inc.-compatible voice recognition board said to allow users to input commands and repetitive data by speaking into a microphone.

Providing voice recognition signal processing algorithms, the Apple Voice Input Module (Avim) measures the user's verbal commands, recognizes them and then responds with any sequence of keystrokes that users require. Its resident memory of 8K bytes can store up to 80 voice-command/keyboard-response sets at one time; other commands can be stored on disk and accessed in seconds, a

spokesman noted.

A comprehensive menu-driven utility program reportedly allows users to create command sets and train them to recognize the user's voice. Avim will input any Apple-compatible program with no software modifications and operates as a keyboard emulator rather than a peripheral device operating through an RS-232 port.

Complete turnkey systems, including the Apple IIe computer, are available. The add-on system for the Apple II+, IIe and Apple-compatible systems is priced at \$995. An adapter for the Apple IIe is an additional \$75. Voice Recognition Systems is located at 550 Battery St., San Francisco, Calif. 94111.

### Book Series on Desktops Released From Digital Press

BEDFORD, Mass. — Digital Press, Digital Equipment Corp.'s in-house publishing group, has released a series of books called "Desktop Computer Series," which centers on the issues of personal computers in business.

Approximately 20 titles will be included in the series over the next two years, the vendor said. The initial book, "Your First Business Computer," will be followed by titles that will focus on personal computers in a corporate environment, management applications of personal computers and specific professional applications such as law, medicine and

engineering.

Books in the series differ from other Digital Press publications because they address the needs of computer users, not professionals.

"Your First Business Computer" costs \$15 from Digital Press, 12 Crosby Drive, Bedford, Mass. 01730.

### Microfiche Reader Features Indexing, Constant In-Focus

MEMONOME FALLS, Wis. — Realist Micrographic Systems has announced the Realist 475, a 4-size microfiche reader that features an 8 1/2-in. by 11-in. screen.

The rear projection reader features an indexing system that uses a point of light to mark the location on the index grid. The unit also includes a constant in-focus feature that does not require the user to refocus when changing from frame to frame, the vendor said.

The unit costs \$279, the spokesman said from Realist Micrographic Systems, Megal Drive, Menomonee Falls, Wis. 53051.

### S/COM Disk Subsystem Out For IBM Personal Computers

NORWOOD, Mass. — Science & Communications, Inc. (S/COM) has announced a 10-MB-byte disk subsystem for the IBM Personal Computer and the Personal Computer XT. The 10R subsystem is said to be three times faster than the IBM-supplied subsystems in accessing and transferring data.

Compatible with the Microsoft, Inc. MS-DOS operating system and Digital Equipment Corp.'s minicomputer using RLE emulation, the 10R subsystem has an S/COM file conversion utility that allows users to exchange programs and data between their IBM Personal Computer and a DEC minicomputer.

The price of the 10R ranges from \$1,490 to \$2,445. S/COM is located at 64 Broadway, Norwood, Mass. 02062.

### Company Adds OMR-2080 To Family of Card Readers

CHATSWORTH, Calif. — Chatsworth Data Corp. has added another member to its OMR-2000 family of card readers that reportedly eliminates the need for timing marks.

Because it does not require timing marks, the OMR-2080 is able to scan punched or preprinted data. The card stacker holds up to 150 cards and can scan cards at a rate of 100 per minute, the vendor said.

Suggested retail for the OMR-2080, which is standardly equipped with an RS-232 interface, is \$1,725, Chatsworth Data said from 20710 Lassen St., Chatsworth, Calif. 91311.

### Printer Stand Introduced From Virco Manufacturing

TORRANCE, Calif. — Virco Manufacturing Corp. has introduced the Universal printer stand, designed to accommodate bottom-feed and back-feed printers.

Top brackets adjust to fit all printer sizes, and an optional wire rack attaches to the back of the stand to catch printed forms, the vendor said.

Prices for the Universal printer stand range from \$173 to \$191. Virco is located at 1331 W. Torrance Blvd., Torrance, Calif. 90501.

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APR 1984



# Study Examines Future of OA Markets

By Katherine Hafner  
CW Staff

FRAMINGHAM, Mass. — Users of five different categories of office automation equipment spent slightly over \$7.75 billion in 1982, and that number is expected nearly to double by 1987.

In a recent study, International Data Corp. (IDC) located here examined five major office automation equipment markets: plain paper copiers, facsimile, private branch exchanges, electronic typewriters and office systems.

According to the IDC study, titled "Office Automation Equipment Markets," electronic typewriters have yet to begin to decline in growth.

IDC breaks electronic typewriters into three categories: low-end/limited lift-off with no removal media and a correctable buffer memory of one line or less; low-end/extended lift-off with no removable

'IDC (International Data Corp.) estimates that the installed base for dedicated word processors stands at over 700,000 for year-end 1982, and projects that number will reach 2.6 million by 1987.'

media and a correctable buffer memory of more than one line, and high end, with removable media.

IDC projected a 32.1% compounded annual growth rate for electronic typewriters for the years 1982 to 1987, which the study called "a more than respectable rate for a product that many observers were convinced was on its way out little more than three years ago."

The reasons users will keep buying

electronic typewriters, according to the study, are the replacement of existing electric typewriters with electronic typewriters and the electronic typewriter's obvious suitability to certain office functions, such as typing envelopes and quick letters, along with "the refusal of some office workers to use anything even remotely resembling a computer."

Trends in electronic typewriter technology have brought internal text manipulation ability in the high end at "the respectable 128K [byte] range."

"The ability to increase internal memory at an optimum price has allowed manufacturers of electronic typewriters to add features such as format storage, global search and replace, communications, external storage, display screens and communications options without substantial price increases," the study pointed out. The study emphasized the areas of display, external storage and communications as those with the most significant technological innovations.

## Word Processing Growth Seen

As for word processing systems, IDC said that these comprise one of the "high-growth segments of the computer industry."

IDC estimates that the installed base for dedicated word processors stands at over 700,000 for year-end 1982 and projects that number will reach 2.6 million by 1987.

Technological trends in office systems include the requirement that the machine "communicate with an ever-growing number of devices in the office." That trend is expected to continue, with special emphasis being given to facsimile interfaces.

"To date, facsimile transmission is still the most appropriate way to deliver a signed document rapidly over a long distance," according to the study. "The major drawback is the inability to manipulate any portion of the document once it has been received."

By the mid-1980s, IDC expects to see technology advance to the point where word processors will be able to receive, store and manipulate documents transmitted via facsimile.

Prices for facsimile machines continue to fall, and increasing numbers of buyers are choosing machines with faster transmission, whether through digital or analog transmission.

"As with other office technologies, there is a trend toward the integration of the facsimile function into other systems," the study noted. "As the technology for dealing with compound documents [mixed images, text, data and even voice] improves, more and more of what would have been facsimile transmissions will take place in what is essentially an electronic mail network."

The study projected technology to move toward a combination of improved scanning and data compression techniques, coupled with higher speed modems at lower prices.

"However, the real technological breakthroughs have yet to be made in the area of integrating facsimile into other modes of information transfer and processing," the study noted. By the time this happens, facsimile will no longer be exclusively a technology of dedicated facsimile units, but one component of general-purpose workstations.

The study is available for \$3,500. More information on the study is available from IDC at 5 Speen St., Framingham, Mass. 01701.

## Package Lets IBM Micro Users Transfer Documents to CPU

KING OF PRUSSIA, Pa. — A package to permit users of the IBM Personal Computer to transfer word processing documents to IBM and IBM-compatible mainframe computers has been announced by Integrated Technologies, Inc. (ITI).

The company said it has now extended its Soft-Switch package to the IBM Personal Computer, enabling users to transfer documents to mainframes for archiving, translating and forwarding to other word processors. The package is used with Softword Systems, Inc.'s Multimate word processing programs, according to a spokesman for ITI.

The package requires no new hardware and uses existing communications equipment, the spokesman said. It reportedly transfers information without need of intervention by either receiving or sending

operators and translates formatting commands as if the document had been prepared on the receiving units.

The price is \$20,000 for software for the host computer, \$5,000 for support and \$150 for each IBM Personal Computer. More information is available from Integrated Technologies at 200 N. Warner Road, King of Prussia, Pa. 19406.

## Lexcorp Unveils WP Add-On For Typewriter Users

ATLANTA, Ga. — Lexcorp has introduced a word processing add-on for electronic typewriters.

The Lexwriter Series II add-on reportedly includes word processing features such as letter merge and phrase file, while utilizing nonvolatile memory for storage in place of diskette storage. The system has a storage capacity of 16K char. expandable to 64K char., or in excess of 32 pages of text storage.

According to a spokesman for Lexcorp, the Lexwriter series is compatible with electronic typewriters made by Adler-Royal Business Machines, Inc.; Olympia USA, Inc.; Olivetti Corp. of America; Remington Rand Corp.; 3M Corp.; Hermes, Inc. and Silver Reed America, Inc.

Priced at \$1,595, the Series II is available from Lexcorp at 11030 Roselle St., Number 4D, San Diego, Calif. 92121.

## WP Package Out For Apple, IBM

COSTA MESA, Calif. — State of the Art, Inc. has introduced a word processing package for Apple Computer, Inc.'s Apple II and Ite and IBM's Personal Computer.

Designed for the first-time user or current user wishing to expand capabilities, the package reportedly requires no special codes or instructions — only straightforward commands. Features include a Help command, a list option, password security, a sample document disk and menu-driven program control.

The package is priced at \$395 from State of the Art at 3183-A Airway Ave., Costa Mesa, Calif. 92626.

## IMC's Slide Program Available

WASHINGTON, D.C. — The International Information Management Congress (IMC) is making its slide program, titled "The Automated Office," available in French, Spanish, German and English.

Written by Don M. Avedon, executive director of IMC, the slide show explains the concept of and reasons for office automation, according to a spokesman for IMC.

The concept of technology integration is brought out through examples, and the

program covers document processing from creation to digital manipulation, automated retrieval, hard-copy and soft display output.

Specific topics included in the program are word processing, data processing, optical character recognition, intelligent copiers and communications, the IMC spokesman said.

The program is available for \$100 from IMC through Box 34604, Bethesda, Md. 20817.

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# OMB Update May Be Bonus To DP Services Industry

By Jake Kirchner

CW Washington Bureau

WASHINGTON, D.C. — New federal guidelines directing agencies to contract out for administrative services, including data processing, could mean billions of dollars in new business for commercial DP services firms.

The guidelines could also mean a loss of jobs for federal DPs.

Government and private sector sources agree that the guidelines could result in a massive amount of government DP work going to outside contractors, but there are no good figures on exact dollar amounts involved. DP services firms note that the private sector reliance directive has been around for years, and there is no guarantee the latest version will be pushed any harder than previous ones.

The guidelines are contained in the Office of Management and Budget's (OMB) A-76 memorandum, which states that "it has been and continues to be the general policy of the government to rely on commercial sources to supply the products and services the government needs." OMB's Office of Federal Procurement Policy (OFPP), which released the updated regulations Aug. 16, identified thousands of government activities that could conceivably be performed by outside contractors.

Among those activities are a number of DP jobs, such as time-sharing, facilities management, programming and systems analysis, design, development and simulation. (Continued on Page 76)

## IIA Statement Calls for Reliance On Private Sector

By Jake Kirchner

CW Washington Bureau

WASHINGTON, D.C. — The Information Industry Association (IIA) has issued a policy statement urging the government not to compete with the private sector in the provision of information services.

The IIA statement was issued the same day the Office of Management and Budget (OMB) released updated regulations for its A-76 memorandum, which calls on agencies to rely on the private sector whenever possible (see related story, this page).

"We believe that the cornerstone of (Continued on Page 76)



Kenneth Olsen

## DEC's Olsen Reaffirms Quality Theme

BOSTON — Unshaken by criticisms that its company has been slow to react to marketing opportunities in several different markets, Digital Equipment Corp. President Kenneth Olsen told a gathering of financial analysts here last week the company will not abandon its long-term strategy of providing quality products to the industrial market.

"Our response time will be slow — we plan it that way and it will always be that way. We don't want to produce TV-quality computers. We are in the business of making serious computers," Olsen said.

Critics say the company has missed its window in the high-end 32-bit market by being more than a year late with the follow-up to its VAX-11/780 superminicomputer. Over the past 12 months DEC competitors including Data General Corp. and Prime Computer, Inc. have produced systems superior to the VAX-11/780 that are superior in terms of price and performance. What has placed even more pressure on DEC to come up with the 11/780's follow-up is IBM's advertising its 4341 mainframe as an alternative to the 32-bit superminicomputer offerings of DEC and DG.

Further, IBM has reduced prices on the 4341, making it a price/performance competitor with the VAX.

DEC has also been criticized over the (Continued on Page 78)

## Magnuson Viable But Changed Six Months After Chapter 11

By Bill Laberis

CW Staff

SAN JOSE, Calif. — Six months after scurrying for protection under the federal Bankruptcy Code, Magnuson Computer Systems, Inc. is still alive and selling its now-aging line of IBM-compatible computers.

Under the rules of Chapter 11 of the code, Magnuson continues to operate while insulated from a series of lawsuits brought against it by shareholders and former executives. After staggering losses in 1982, the company now boasts a positive cash flow, mainly as a result of having greatly downsized its operations.

In many regards, Magnuson is clearly not the company it once was, and few deliveries of its M80 series processors are being made for end users.

Rather, the company has radically restructured its operations and internal organization as it has struggled to get itself back to financial health, with one eye toward gaining the favor of a suitable takeover candidate.

At present, Magnuson employs about 100 people, a fraction of the 650-person payroll it maintained when the company was going full tilt two years ago. Paring the payroll in this manner has been a key-stone of enabling the company to attain the positive cash flow necessary to reorganize successfully, Charles S. Strauch, Magnuson president, said in a recent interview.

Further, Magnuson today has no internal sales force. The firm is not enhancing its present processor line, nor does it have plans to announce any new additions in the near future. Magnuson does not manufacture the internal multiple-layer boards that are the brains of its mainframes. Nor does the company have an internal service organization supporting the



**MAGNUSON  
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company's base of 400 processors scattered throughout some 300 individual user sites.

Instead these various functions are carried out by what Strauch described as "arm's-length" companies, housed under the Magnuson roof and run by former Magnuson executives. This arrangement, he said, has further contributed to Magnuson's positive cash flow, and is part of the (Continued on Page 78)

## Pansophic Emerges From Suit With Exclusive Rights to SGT

By Bill Laberis

CW Staff

SALT LAKE CITY, Utah — A bitter lawsuit over the marketing rights of an IBM CICS program development tool has been settled out of court, with Pansophic Systems, Inc. emerging with full and exclusive rights to the product.

By the terms of the settlement, Future Software, Inc. has dropped its \$115 million suit against both Pansophic and Software Generation Technology (SGT) Corp. in return for a cash payment in excess of \$1 million, spokesmen at each company confirmed.

Pansophic now has exclusive rights to SGT, the development tool, which the company will market and enhance under the name Genex/Ol. Pansophic said it will honor all the terms of contracts written by

Future Software for SGT, and will provide maintenance to SGT users who purchased the package from Future Software. Future Software will continue to develop and market its other lines of IBM mainframe software.

The settlement came one month after a Utah District Court judge denied Pansophic's motion to dismiss the suit, which charged breach of contract and other tortious offenses. That action had apparently set the stage for a protracted court battle.

But both parties contacted last week said the settlement was accomplished "amicably" and quietly.

The suit, filed in March, charged that Pansophic's sales representatives had attempted to subvert the efforts of Future Software, which held marketing rights to (Continued on Page 80)

COMPUTER INDUSTRY

## IIA Urges Support of Private Sector

(Continued from Page 75)

information policy should be primary and increasing reliance on the private sector and the information marketplace rather than on the public sector for providing information products and services," the statement said.

In recent years the IIA has battled a number of federal agencies that sought to develop information services which the association argued would be in competition with the private sector.

In one case, the association persuaded the U.S. Commerce Department to cooperate with rather than compete with the private sector in the department's Worldwide Information and Trade System (WITS), an on-line system designed to facilitate firms' access to international trade data.

The association hopes it can ward off that kind of proposal, according to IIA President Paul Zurkowski.

"Over the years the IIA has sought

to curb the growth and avert the start of government information activities that we felt were more appropriately performed by the market-driven private sector," Zurkowski said.

### Policy Statement

Accordingly, the policy statement calls on the government to desist from initiating projects that would compete with the private sector and to review periodically existing government information services to prevent or diminish competition with commercial organizations.

Further, IIA said that in the case of "a genuine, demonstrable and critical need for an information product or service not currently provided" by the private sector, the government should encourage the private sector to meet the need.

Failing that, the association said, the government should "provide secondary inducements for the private sector to meet the need through such mechanisms as subsidies, loans,

grants, tax credits and so on."

If the government decides to go ahead with development of this kind of service, it should contract the project out, the association added, as well as make sure the government agency prices the product to recover all development costs. In order to compete fairly with possible private offerings.

Noting that the IIA statement was issued the same day the A-76's updated regulations were released, Robert Willard, IIA vice-president for government relations, said that "A-76 provides a nice philosophical basis because it says the government shouldn't compete with private citizens, but we go a bit beyond that."

Willard explained that the A-76 memorandum deals with how the government spends money, but the IIA would like the government to think about the possibility of not spending any tax dollars at all when it comes to an identified need for information services.

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Chicago, IL	September 7
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Cleveland, OH	September 15
Columbus, OH	September 9
Dallas, TX	September 7
Denver, CO	October 11
Detroit, MI	November 3
Edmonton, ALTA	October 13
Harrisburg, PA	November 22
Houston, TX	September 29
Indianapolis, IN	September 20
Kansas City, MO	September 22
Los Angeles, CA	September 21
Meadowlands, NJ	November 30
Minneapolis, MN	September 13
Montreal, PQ (Eng.)	September 14
New York, NY	September 21
New York, NY	September 21
Omaha, NE	September 29
Ottawa, ONT	September 13
Parsons, PA	September 23
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Rochester, NY	September 13
Salt Lake City, UT	September 27
San Diego, CA	September 11
San Francisco, CA	September 15
San Jose, CA	October 18
Saville, MA	September 29
Tampa, FL	November 29
Toronto, ONT	September 20
Tulsa, OK	October 11
Valley Forge, PA	December 1
Vancouver, BC	November 30
Washington, DC	September 7
Washington, DC	November 22
Winnipeg, MAN	September 28

## OMB Update May Mean Services Bonanza

(Continued from Page 75)

tion, data entry, telecommunications and systems and equipment engineering, installation, operations and maintenance.

The regulations provide specific guidelines for deciding whether to continue to perform these activities in-house or to contract out for them. Agencies have until Sept. 30, 1987, to

conduct those evaluations.

An OFPP official, who asked not to be named, said agencies have already identified for OMB about \$6 billion in activities of all kinds that would be subject to these reviews. The official said OMB estimates as much as 25% of the costs for these activities can be saved once they are reviewed, either through in-house effi-

ciency measures or by deciding to take competitive bids from outside contractors.

The official added that the \$6-billion does not include a number of DP activities, but agreed that at least several billion dollars worth of DP work could be subject to the new directive. Data processing "is one area in the government that's pretty much has not been touched." The source also said that 50% of those activities reviewed end up being contracted out.

### 'Fat City'

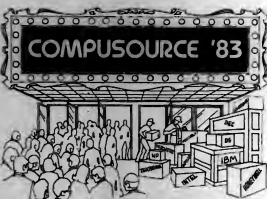
Warren Burton, vice-president of industry and government relations for Tymshare, Inc., a major federal services contractor, agreed the new regulations, if closely followed, could mean billions of dollars for private firms. "If, in fact, OMB really forced the implementation of A-76," Burton said, "the commercial sector would be in fat city."

Burton, who is chairman of the Association of Data Processing Service Organizations, Inc.'s Government Procurement Committee, added, however, that "we'll believe it when we see it." Government employee unions have been successful in pressuring Congress to exempt agencies from A-76 rules, he observed, and he doubted it would be any different in this case. "There are always political pressures," he said.

Government DPs are not taking the new regulations lightly, however. Al Iagnemma, a General Services Administration official and president of the Federal DP Users Group (Fadpug), said his organization will be looking very closely at the new directive and the effect it might have on federal DP jobs.

In the past, A-76 cost-comparison studies have generally called for the work to remain in-house, Iagnemma noted. Unless the government pushes the new regulations and has an independent review of the cost studies, the situation will not change, even though in many cases the DP work "can be done a hell of a lot cheaper and better" by private firms.

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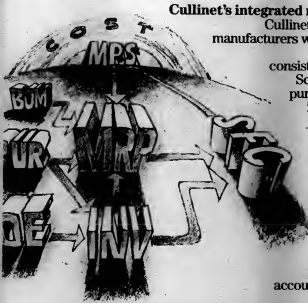
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# Magnuson Alive But Changed After Chapter 11

(Continued from Page 75)  
overall change, which Strauch said is a "very creative plan for reorganization, under the circumstances."

Such organizational and operational changes helped Magnuson land an extension to an OEM contract with STC Ultimate Systems, Inc. Last month, whereby Magnuson will provide its processors and documentation for in-

corporation into Ultimac's UNIX systems. Strauch said the company is seeking similar OEM agreements "for long-term stability in the marketplace."

But end-user sales have clearly languished. Strauch claimed that Magnuson is still manufacturing processors for direct end-user sale, but added that, since its Chapter 11 filing, the compa-

ny has shipped to end users about 15 CPUs, a volume the company could easily have supplied from its inventory.

Even though virtually all end-user sales are handled

## MSA To Market Lotus 1-2-3

CAMBRIDGE, Mass. — Lotus Development Corp. announced that Management Science America, Inc. (MSA) will market the Lotus 1-2-3 personal computer program jointly with its Executive Peachpack, which provides a direct interface to 1-2-3.

Under the agreement, MSA has become a value-added reseller for Lotus and will purchase copies of 1-2-3 for resale to customers having MSA on-line systems running on IBM mainframes. MSA customers purchasing the new offering will be able to download mainframe information directly to 1-2-3 running on the IBM Personal Computer using MSA's Peachlink, the company claimed.

The Lotus value-added program was initiated earlier this year, encompassing four categories of resellers including mainframe and mini-computer software firms and systems integrators.

## DEC's Olsen Reasserts Strategy

(Continued from Page 75)  
past year for software problems with its Professional 350 series of microcomputers and its inability to meet demand for all three of its microcomputer systems.

To convince skeptical analysts and the press that the company has been busy over the past year, DEC built a 60,000 sq-ft exhibition called DECtown that showcased most of the company's existing products as well as several unannounced products.

The company was most secretive about its microvax, which DEC claimed will be available in June 1984. A spokesman said the 32-bit system will be based on a very large-scale integration chip set and will use 5 1/4-in. disks. The spokesman declined comment on other features and capabilities of the system and its price.

Other yet-to-be-announced products included a micro-based version of the VAX and a follow-up to the VT100.

by Information Systems Marketing (ISM), headed by Magnuson's former marketing chief Jerry Burke, Strauch denied that the company is, effectively, an OEM.

"ISM does not buy from us and resell, they sell for us. . . . We must develop more than one channel of distribution," Strauch said.

During reorganization, Magnuson settled outstanding debts with 515 vendors for about 25 cents on the dollar. Asked if this might paint

Magnuson as a credit risk, Strauch said, "I believe that the period when people were anxious about where we're going is behind."

Magnuson's short-term goal now is to support its existing customer base, with another arm's-length company called Autologic.

In the longer term, Strauch said, Magnuson will "rely on Autologic for enhancements initially and later for developing features of a new system."

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# Supplying Researchers, Office Space, Hardware CDC Supports Employees' Entrepreneurial Leap

By Tom Henkel  
CW Staff

ST. PAUL, Minn. — High-tech entrepreneurs who start their own firms based on work done for their former employers often spark bitter legal and personal battles, especially when those entrepreneurs raid their former employers to staff the new ventures.

But here, on what could be nicknamed the "supercomputer prize," things appear to be different. Control Data Corp. not only approves the efforts of its two top supercomputer architects to start their own firm, ETA Systems, Inc., but is also putting up the seed money to get the firm off the ground (CW, Aug. 22).

To sweeten the deal, CDC has also thrown in the most seasoned supercomputer researchers and plans on supplying ETA with office space and virtually all the hardware it needs to proceed with plans to develop bigger and faster supercomputers.

ETA is a continuation of existing CDC efforts to produce a successor to the CDC Cyber 205 line of large-scale number-crunching processors. CDC is interested in selling OEM versions of the ETA processors, and it is also interested in reaping any technological discoveries that come from ETA.

But aside from this, CDC appears to be quashing plans to build its own bigger and faster supercomputers operating in the 10C to 30G floating-

point operations per second range.

Lloyd Thorn-dyke, CDC's former senior vice-president for technology development and now one of the principals in ETA, contends CDC is sponsoring the firm because William Norris, CDC's chairman, feels the best way to compete in the supercomputer business is through an entrepreneurial atmosphere, which cannot be simulated in a large corporation. Noting that he and his new partner Neil Lincoln, the principal architect of the CDC Cyber 205, were somewhat constrained by the bureaucracy and

## Analysis

view that new ideas will be turned into results much faster in the newly formed entrepreneurial firm.

But the question remains whether ETA is an attempt to make a quantum leap in supercomputer technology or a statement by CDC that it cannot afford to develop very expensive systems for a somewhat limited audience. Thorn-dyke admitted that CDC's Cyber 205 project, as well as its predecessor, the Star project, were never money-makers for CDC. In fact, several days before Norris an-

nounced the formation of ETA, Thorn-dyke told attendees at the Frontiers of Supercomputing Conference sponsored by the Los Alamos National Laboratory that CDC could no longer afford to pay the high research and development costs necessary to develop a new generation of supercomputers.

Currently, CDC is footing the entire bill for getting ETA started. But Thorn-dyke noted that after ETA completes a 10-million-share stock offering, CDC will wind up owning no more than a 40% interest in ETA. Who will end up with the remaining 60% is unresolved, and CDC is apparently leaving the equity door open.

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## Prototype Device Helps Hitachi Improve Circuits

TOKYO — Hitachi Ltd. has announced that its research laboratory has developed prototypes of gate array and programmable logic array (PLA) integrated circuits, utilizing the Josephson junction structure. When supercooled to -26°C, this structure is said to allow the circuits to operate more than 10 times faster than conventional semiconductors using approximately one one-thousandth the power.

"With these prototype devices, we have established a firm basis for future higher density Josephson gate array and PLA integrated circuit semiconductors," maintained Dr. Ushio Kawabe, chief of the Hitachi development project.

Gate array and PLA semiconductors are semicustomized silicon logic chips. Each basic logic cell of the prototype circuit has a gate delay time of 30 picoseconds and consists of 25 Josephson junctions and 41 resistors.

To assure reliability and high-speed operations, the device has reportedly been designed to run on an ac power supply, necessitating the development of flip-flop circuitry with wider operating margins. Accordingly, a magnetically multicoupled center-feed-type Josephson interferometer was developed.

In the U.S., both IBM and Bell Laboratories have acknowledged having operational prototypes utilizing the Josephson junction circuits in their respective research labs.

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# DG Inks Five Software Vendor Agreements

SUNNYVALE, Calif. — Five independent software vendor agreements for Data General Corp.'s Eclipse MV series of 32-bit superminicomputers were announced last month by DG's Technical Products Business Unit.

The agreements with the independent software developers are a result of DG's drive to capture a share of the industrial automation market and to make a broad line of applications software available, said David Rome, manager of industrial systems marketing for DG.

DG said it had reached agreement with the following companies:

- MacNeal-Schwender Corp. of Los Angeles, for the MSC/Nastran general-purpose static or dynamic fi-

nite-element engineering analysis program.

- PDA Engineering, Inc., based in Santa Ana, Calif., for the PDA/Patran-G interactive graphics system for constructing solid three-dimensional and finite-element structural models.

- The Georgia Tech Research Institute at the Georgia Institute of Technology for the Georgia Tech Structural Design Language, a structural design/engineering and finite-element analysis system.

- Construction Systems Associates, Inc. of Marietta, Ga., for its Space Modeling and Interference Detection System that monitors design and construction of complex structures and the Construction Ac-

counting and Management System for integrated financial operations of construction and engineering firms.

- Power Technology, Inc. of Schenectady, N.Y., for its PSS/E interac-

tive simulator for power-system engineering and planning.

DG said all the packages are compatible with all models in the Eclipse MV series.

## Factory Automation Mart Forecast to Climb Into 1990s

CLEVELAND — The market for factory automation equipment will boom through the end of this decade and well into the 1990s, according to a recent study by Prodicasts, Inc.

In its study, "Factory of the Future," the market research firm points out that all of the equipment

categorized as "tomorrow's" hardware is available today, including manufacturing computers, computer-aided design and manufacturing systems, machine tools and controls and industrial robots.

According to Neil DeGeronimo, manager of the study, the rush to automation hit a snag during the 1970s when high inflation and soaring interest rates set in.

The study forecast robot sales to approach \$1 billion by 1987, and by 1995 the overall factory automation equipment market will reach \$37 billion.

The study is available for \$1,400, the firm said.

Predicasts is located at 11001 Cedar Ave., Cleveland, Ohio 44106.

## USTSA Directors Choose Officers

CHICAGO — The directors of the United States Telecommunications Suppliers Association (USTSA) have chosen a new slate of officers to serve for the fiscal year ending June 30, 1984.

The association's officers include: President J. Prewitt Wehle, vice-president, Reliance Comm/Tec; Vice President Curtis Sampson, president, Communications Systems, Inc.; Treasurer Kenneth Ray, marketing vice-president of ITT Telecommunications, Inc.; and Secretary Paul Henkels, president, Henkels & McCoy, Inc.

The USTSA is located at 333 N. Michigan Ave., Chicago, Ill. 60601.

## Pansophic Wins Rights to Product

(Continued from Page 75)

SGT. Future Software had acquired limited marketing rights to SGT a year earlier from SGT Corp.

Pansophic, which had developed and marketed products similar to SGT, attempted to acquire Future Software's rights to SGT, the suit continued. When it failed to do so, Pansophic bought the SGT product from SGT Corp. and began marketing the tool itself.

The allegations, from both sides in the dispute grew heated just before and after the suit was filed, with Future Software at one point suggesting that Pansophic representatives may have stolen the sign-in sheet from an SGT seminar sponsored by Future Software. Robert Wall, Future Software's president, offered a \$1,000 reward for information leading to the arrest of the alleged perpetrators.

Pansophic categorically denied all charges.



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# 'Pentagon' for High Technology Urged Forum Needed to Set Fifth-Generation Policy

By Robert Bitt

CW West Coast Bureau

MENLO PARK, Calif. — A senior member of the country's second-largest research institute here has called for the establishment of a high-technology forum to determine U.S. policy toward fifth-generation computers.

Julius Murray, a staff scientist and management consultant at SRI International, Inc., urged both the government and corporations to set up a "Pentagon for high technology" to assess the technological, political, economic and social consequences of fifth-generation computers.

Fifth-generation computers incorporate many of the same technologies in present-day machines, but rely heavily on artificial intelligence and other so-called knowledge systems to process data.

"The fifth generation is not simply another computer," Murray said. "It is the most important issue in technology today, forcing radical changes in communication, knowledge packaging and distribution."

This "Pentagon," Murray explained, would involve one or more

multidisciplinary national laboratories funded by the government that would focus on the effects and uses of intelligent computers. The forum would include social scientists and social workers as well as engineers and computer experts, he said.

With the Japanese pouring money and manpower into their fifth-generation research, the U.S. can no longer afford the waste that goes along with independent company research, hence the need for a concerted national approach, he added.

The scientist's recommendation coincided with the launching of an SRI multiclient-sponsored research program titled "Microelectronics —

Applications, Materials and Technology," to begin in November.

The one-half million dollar program — involving U.S. companies such as Sperry Corp. and Digital Equipment Corp., British Petroleum Ltd. in the U.K. and leading Japanese firms — will result in five state-of-the-art reports, including one on intelligent computer design, architecture and technologies, Murray said.

The computer design study will focus on five categories:

- Advanced architectures — involving superfast performance through new parallel systems in which thousands of processes work concurrently on different parts of

the same problem.

- Applications — specifically artificial intelligence as applied to visual, graphic, voice and handwritten input.

- Software systems — particularly knowledge-based systems for problem solving and inference.

- Very large-scale integrated technologies — focusing on faster components coupled with parallel architectures that promise to increase speeds 100 to 1,000 times.

- Supporting technologies — notably new communications technology to support machine-to-machine and other interfaces and computer generated software.

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## Nickels & Dimes

The Monchik-Weber Corp. has reported revenues of \$21.9 million and net income of \$65,000 for the fiscal year ended May 31, compared with revenues of \$22.9 million and net income of \$1.7 million for 1982. Revenues for the fourth quarter of 1983 increased 29% to \$6.2 million from the preceding quarter.

\$\$\$

Corvus Systems, Inc. has reported a 77.6% increase in sales and an 85.6% increase in income for fiscal year 1983, ended May 31. Sales were \$47.6 million with net income of \$4.3 million, compared with sales of \$26.8 million and income of \$2.3 million for the preceding year.

\$\$\$

Altos Computer Systems, Inc. has reported net sales for the fiscal year ended June 25 of \$74.6 million, a 46% increase over fiscal 1982. Net income rose 39% to \$7.9 million or 58 cents per share, from \$5.7 million or 50 cents per share.

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Tandon Corp. has recorded net income for the third quarter ended June 24 of \$8.5 million, an 85% increase over net income for the third quarter last year.

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## Supershorts

Lotus Development Corp. and Texas Instruments, Inc. have signed a distribution agreement that will make Lotus' 1-2-3 integrated program available in more than 300 authorized TI dealerships in the U.S. Under the agreement, TI will distribute the TI Professional computer version of 1-2-3 and an orientation kit to its dealers on an introductory basis.

Edutronics/McGraw Hill Training Systems, has acquired exclusive rights to market the Cambridge Training Center Curriculum courses developed at MIT's Sloan Institute of Management.

Control Data Corp. has acquired a license from Chang Laboratories,

Inc. to market Chang's business software products for personal computers.

Thirty-nine community groups nationwide have been awarded grants by Apple Computer, Inc. to form nine microcomputer networks that will allow them to share information and resources.

Programs Unlimited Computer Centers will carry the Digital Equipment Corp. microcomputer line under terms of a recently signed 12-month agreement.

Anacomp, Inc. will provide transaction switching and processing services to Access Banking Network, a

Toronto-based company planning implementation of a shared ATM network in Canada.

Lanier Business Products, Inc. will market five Peachtree Software, Inc. software packages on its EZ-I line of workstations and on a new, low-cost professional computer planned for release later this year.

Ungerma-Bess, Inc. will supply communications products for use in Texas Instruments, Inc.'s business system series computers and professional computer.

NCR Computer and Computer Terminal Systems, Inc. (CTS) have signed a long-term agreement making NCR

the exclusive national service agent for CTS computer-generated label, form and ticket printers and printing terminals.

Technicon Data Systems Corp. has signed an agreement with Wang Laboratories, Inc. to market a medical version of Wang's information management system on the VS 90 and 100.

IBM has appointed Cybertek Computer Products, Inc. as a value-added reseller for the IBM Personal Computer. Cybertek uses the IBM Personal Computer in Pro, its professional insurance agent system.

Cullinet Software, Inc.'s annual Domestic User Week will be held Oct. 2-6 in New Orleans, and its International User Week will be held Nov. 6-10 in Monte Carlo, Monaco. This year's meetings will feature the Demonstration Center — an opportunity to see on-line demonstrations of IDMS/R, Personal Computer Software System, ADS/On-Line, Utilnet Manufacturing System, Utilnet Financial System, Trendsplus and education video tapes.

MCI Communications Corp. has been awarded a cellular mobile telephone franchise in Pottsville, Pa., by a Federal Communications Commission judge. The company will begin operation of the 14-cell system as soon as it receives authorization from the Pennsylvania Public Utilities Commission.

NCR Corp.'s engineering and manufacturing plant in Dundee, Scotland, will begin producing the recently released Tower 1632 computer. The Tower 1632 will also continue to be produced in Columbia, S.C., where it was developed.

Connell Brothers Co. Ltd., a San Francisco-based export trading firm, has formed a new division that will specialize in exports of American-made computer software, components and supplies to the Far East. The new division will act as the export arm primarily for small and medium-size computer firms.

Michael A. Germano, a senior executor in telecommunications at IBM's Communications Products Division, has received a \$100,000 award for a suggestion that improved the manufacturing process for video display keyboards.

Mini-Computer Business Applications, Inc. (MCBA) plans to distribute the Fingraph visual management support system with linkage to MCBA software packages written in Dibase for Digital Equipment Corp.'s PDP-11 and VAX-11/730, 750 and 780. General ledger will be the first MCBA package to be linked to Fingraph with linkage to 15 other accounting, distribution and manufacturing packages to follow.

Cotton States Mutual Insurance Co. has formed State, Inc., a wholly owned subsidiary that will market software programs and consulting services to the insurance industry.

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September 13-15		Section
November 7-10		Section
January 16-18		Section
September 12-15	Systems Analysis Workshop	Section
September 19-23		Section
October 2-7		Section
October 12-15		Section
October 17-21		Section
November 14-18		Section
December 5-9		Section
January 9-13	Systems Design Workshop	Section
September 19-23		Section
October 2-7		Section
October 12-15		Section
October 17-21		Section
November 14-18		Section
December 5-9		Section
January 12-14	Cost-Benefit Analysis for the Systems Professional	Philadelphia
December 12-14		Section
January 19-21	Data Security & Controls	Section
November 14-18		Section
December 5-9		Section
January 11-13		Section
September 7-8	Statistical Program Systems	Philadelphia
November 14-18		Section
January 7-11	ERP Quality Assurance	Section
September 19-21	Project Management & Control	Philadelphia
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September 26-28	Data Analysis Workshop	Section
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## Supershorts

Northern Telecom, Inc. and its research affiliate BNR, Inc. have established a BNR laboratory to serve the specialized and resale com-

mon carrier market and the private network market.

Vector Graphic, Inc. will market Information Solu-

tions, Inc.'s software products, including the Firm Solution, Alert and Analyzer, through its dealer network as part of a total system of hardware and software aimed at small to mid-size law firms.

Lee Data Corp. has begun distributing Micropro International Corp.'s Wordstar software package on its Series 700 IBM Personal Com-

puter- and 3270-compatible terminals.

Comshare, Inc. has formed a Professional Services Division which will provide IBM mainframe users with problem-solving counseling and support. The focus of the division will be application design and development, project management, custom programming, distributed system design

and implementation. Information center planning and discipline support.

Martin Cooper, former corporate vice-president of Motorola, Inc., has formed Cellular Business Systems, Inc., an information management company for the cellular radio industry. Cooper will serve as chairman and chief executive officer of the Chicago-based company.

## Executive Corner

■ Gary Hughes has been named president and chief executive officer of Callan Data Systems, Inc.

■ William G. Nelson has been appointed executive vice-president, North American sales, at Panosch Systems, Inc.

■ Edward Faeh II has been named vice-president of government systems engineering and Frank Chifford, vice-president of finance and administration, at Advanced Computer Communications.

■ Henry W. Donaldson has been named vice-president, marketing and business planning, for the GTE Telephone Operating Group.

■ Robert B. Dixon has joined Business Computing International, Inc. as senior vice-president and chief financial officer.

■ William G. Howard Jr.

has been named vice-president and corporate officer of research and development at Motorola, Inc.

## Getting your system in front of management is finally made simple.

Now your system can be accessed quickly and easily with Northern Telecom's Displayphone terminal. It's as simple to use as a telephone. And compact enough to fit on everyone's desk.

Perhaps the most difficult part of your job is getting your system in front of the people who would benefit from it most. Management often finds computer terminals too bulky or too complicated to operate. As a result they shut themselves off from information that can be vital to your company's productivity.

MIS professionals in a variety of industries have discovered the Displayphone® terminal, an ideal solution to the problem of user acceptance. Voice and data are integrated into one compact unit whose sophisticated capabilities are so easy to use, everyone will welcome it on their desks.

Menus of features and functions, visual prompts and terminal-resident soft keys guide even novice data users through correct operation easily. And soft keys can also be downloaded from your host computer for single-key activation of program commands. As an advanced business telephone, the Displayphone unit brings the convenience of voice features such as directory dialing to data calls, and allows simultaneous voice and data communications.

In addition to its ease of use, the Displayphone terminal offers powerful data access capability.

It is an asynchronous terminal that can also be configured to operate in IBM 3270 and other sophisticated computer environments. This flexibility gives users high speed access to a full range of corporate and public data bases.

The Displayphone terminal is an exciting example of Northern Telecom's commitment to the OPEN World—our approach to information management that combines telecommunications and computer technology in innovative ways to increase productivity, save time...and money.

To find out how productive the Displayphone terminal can be for your company call 800/621-6476. (In Illinois: 800/572-6724; in Canada: 800/268-9079), or send

the rational approach to information management. It's the best of all possible worlds.

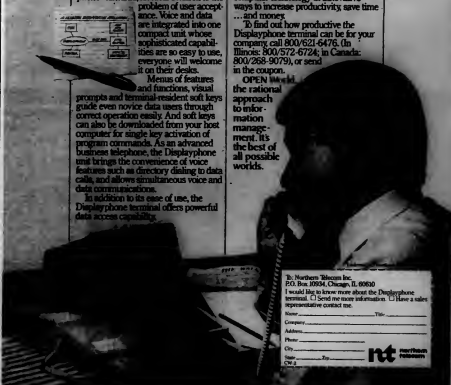
## Firm Offers Four Courses On DP Issues

ARLINGTON HEIGHTS, Ill. — Four new DP courses, including one created for senior management, are available from the multimedia library of Advanced Systems, Inc., the company announced recently.

"Executive Issues — Building the Computer-Based Architecture Bridge," was developed with Nolan, Norton & Co. for senior management. It is said to provide architecture concepts and computer-based architecture as a bridge between existing applications portfolios and those that must be developed to utilize emerging technologies.

Other courses announced include "MVS/SP JES2: Basic Operator Training," designed for new system console operators; "Mapping Facilities for IDMS-DC, UCF, ADS/Online," for personnel working with these three Cullinet Software, Inc. products; and "ADS/Online Education Series," a reference library for teaching the steps in developing an on-line system.

License fees range from \$50 to \$100 a month. More information is available from Advanced Systems, 2340 S. Arlington Heights Road, Arlington Heights, Ill. 60005.



B. Northern Telecom Inc.,  
P.O. Box 10904, Chicago, IL 60610

I would like to know more about the Displayphone terminal. ☐ Send me more information. ☐ Have a sales representative contact me.

Name \_\_\_\_\_ Title \_\_\_\_\_  
Company \_\_\_\_\_  
Address \_\_\_\_\_  
Phone \_\_\_\_\_  
City \_\_\_\_\_  
State \_\_\_\_\_ Zip \_\_\_\_\_  
CWI-8

nt northern telecom

# POSITION ANNOUNCEMENTS



## IS HAPPINESS SOMEWHERE ELSE?

Perhaps for sometime now you've been thinking that you'd like to improve your life style. You may have thought about moving to some favored part of our country. For one reason or another you may have put off making a decision. Certainly moving your family and yourself to another part of the country is not without some complications.

Relocation, relative to your career, however, is much easier than you may think. One of the major reasons for the existence of NCA is precisely to help those who do want to relocate. We've been doing it successfully for thousands of computer professionals for a great many years now... and we're specialists in every aspect of the relocation process. Want to hear about it?

Come In. Call. Or mail your name to the NCA firm nearest to you. Company clients assume our fees and generally pay interview and relocation costs.

**ATLANTA:** (BA) Limited  
229 Peachtree Street, Suite 100-C  
Atlanta, Georgia 30303 (404) 501-6546

**BOSTON:** Robert Kivner and Co. Inc.  
North Brook Park, Suite One, 90 Bedford Street  
Lexington, Massachusetts 02173 (617) 863-7020

**CHICAGO:** Trust, Hertz & Associates  
152 N. Wacker Drive, Suite 1700  
Chicago, Illinois 60606 (312) 817-7055

**COLUMBUS:** Michael Thomas, Inc.  
63 E. Wilson Bridge Road, Suite 201  
Westborough, Ohio 43081 (614) 846-0926

**DALLAS:** DataPro Personnel Consultants  
17711 Highway 330, Suite 501  
Dallas, Texas 75229 (214) 691-8100

**DETROIT:** Dataflow Systems Personnel Inc.  
3000 Ryan Center, Suite 2500  
Southfield, Michigan 48075 (313) 953-5385

**FLORIDA:** Data Science Personnel, Inc.  
P.O. Box 6577  
Mchamers, Florida 32824 (305) 434-8172

**HARTFORD:** Computer, Inc.  
505 Bayview Avenue  
Hartford, Connecticut 06105 (203) 549-4743

**HOUSTON:** Career Consultants Inc.  
2000 South Post Oak  
Houston, Texas 77056 (713) 635-4100

**INDIANAPOLIS:** Computer Personnel Services, Inc.  
601 N. Pennsylvania  
Indianapolis, Indiana 46204 (317) 634-4712

**KANSAS CITY:** D.P. Career Associates  
8401 Meador, Suite 502  
Shawnee, Missouri, Kansas 66202 (913) 236-8386

**MILWAUKEE:** EDP Consultants, Inc.  
7332 West State Street, Suite 101  
Milwaukee, Wisconsin 53214 (414) 475-0377

**MINNEAPOLIS:** Engstrom Systems Personnel  
636 East City Federal Tower, 20 S. 5th St.  
Minneapolis, Minnesota 55402 (612) 338-6794

**NEW JERSEY:** Systems Search  
10 Midtown Avenue  
Metuchen, New Jersey 07940 (201) 276-781-4000

**NEW YORK:** Total Associates, Inc.  
7 Day Street, Suite 410  
New York, New York 10007 (212) 227-7270

**NEW YORK UPTOWN:**  
CNA Associates Personnel, Inc.  
230 West 42nd Street  
Secaucus, New York 10706 (201) 452-5025

**NORTH CAROLINA:** Consultants  
401 East 7th Street, P.O. Box 6888  
Greensboro, North Carolina 27402  
(919) 372-1481

**PHILADELPHIA:** Systems Personnel, Inc.  
115 West State Street  
Media, Pennsylvania 19033 (215) 543-8880

**PHOENIX:** Professional Career Consultants  
4024 North 19th Street, Suite 402  
Phoenix, Arizona 85016 (602) 274-6886

**SAN FRANCISCO:** The Computer Resources Group  
Inc. Agency 363 Sacramento Street  
San Francisco, California 94111 (415) 398-2525

**SEATTLE:** Royce, Mann, Mann & Associates  
1940 1st Avenue, N.E.  
Bellevue, Washington 98004 (206) 453-2700

**WASHINGTON D.C.:** ESP Systems Corporation  
914 Lancaster Drive  
Silver Spring, Maryland 20902 (301) 549-8971

Call the NCA firm nearest to you for Salary Survey and Relocation Information



National Computer Associates

### URGENT need for qualified Sperry Computer Systems 1100 and OS/3 Cobol Programmers.

#### MID-SOUTH LOCATION

Person(s) selected for position(s) will be expected to work from detail design specification with minimum of supervision. Some travel required.

This is a shirt sleeve work environment, with heavy emphasis on production. Applicant required to have 3-5 years of progressively responsible practical experience, to include working knowledge and use of productivity tools. Experience and background to include working knowledge of MAPPER, FMS8, DMS, TIP/CMS, and/or IMS and communications networking.

Attractive benefit program with salary offered commensurate with ability.

Reply in confidence to:

**Personnel  
P.O. Box 40726  
Nashville, Tennessee 37204**

### SOFTWARE MARKETING On The WEST COAST

Exciting career opportunities available in Bay and L.A. areas to handle sales of data base software packages. As one of the world's foremost research organizations, we have created a new Software Products Research Group and are now setting up a regional sales network to exploit the growing interest in our products.

We expect you to be experienced in database systems but we will consider other backgrounds as long as your marketing/bases record is well established. Local interviews in the Bay and L.A. areas will be arranged later this month. Send your resume immediately to Gary Kravitz, Employment Dept. A-3, or call collect (814) 424-6325.

**Battelle**  
Columbus Division  
360 King Avenue  
Columbus, Ohio 43201  
An Equal Opportunity Employer M/F

### MANAGER, MIS APPLICATION DEVELOPMENT

Brockway, Inc. (NY), a Fortune 500 Corporation which manufactures glass, plastic and metal containers, has a challenging opportunity at its Corporate Headquarters in northwestern Pennsylvania for an experienced EDP Professional.

We are seeking an individual with strong management skills to direct a staff of systems analysts and programmers in the design, development, implementation and maintenance of business systems within our MIS Department. The successful applicant will plan, organize, review and formulate systems development strategies, maintain an effective project support system, provide staff consulting and control departmental costs.

The ideal candidate will possess effective managerial ability with a minimum of 7 years MIS experience in application design and development with at least 3 years in a supervisory capacity. A BS degree, preferably in Computer Science is required. Advanced degree is a plus.

We offer a competitive salary, excellent fringe benefits and the opportunity to develop your professional skills.

For consideration, please send your resume including salary history to:

Lawrence Kutach  
Manager, Salary Employment  
Brockway, Inc. (NY)  
McClough Avenue, Brockway, PA 15824  
Dept. A.D.

**Brockway**

We Are An Equal Opportunity Employer

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## REAL TIME SOFTWARE ENGINEERS.

Harris Controls/Composition Division is a world leader in the development and delivery of real-time process control systems for Utilities/Pipelines and Newspaper Text Processing Systems throughout the international markets.

Immediate openings are available in the Customer Support and Software Development Sections of our Newspaper Text Processing Systems.

- Responsibilities involve the design, documentation, implementation and software maintenance support of real-time systems for the Newspaper Industry both domestically and internationally.
- Our environment is a network of real-time, mini and micro computers in a distributed processing application utilizing Assembly and/or "C" languages with an RSK or UNIX operating system.
- You will be working from specific customer specifications and furnishing technical direction and consultation to customers and in-house staff.

Qualified applicants should have a BS degree and experience in one or more of the above areas. Applicants should enjoy working in a customer-oriented environment.

We are a division of the Harris Corporation, Florida's largest industrial employer with over 9,000 Florida based employees and corporate sales in excess of \$1.2 billion. We are located in Melbourne, a Florida east coast resort area where you will earn nationally competitive income while paying no state or local income taxes and enjoy the generally lower cost of Florida living.

Send your resume to Donald C. Quirk, Harris Corporation, Controls/Composition Division, P.O. Box 430, Melbourne, Florida 32901.



**HARRIS**

An Equal Opportunity Employer M/F/H/V

## MANAGER MANUFACTURING SYSTEMS.

### Exciting Florida Opportunity.

Phenomenal growth. Solid financial base. An exciting combination of significant new products. Proportionally unlimited markets. Sophisticated management systems. A top sales team. \$4.1 million in '81 to \$62 million in '82. These are some of the reasons for excitement at Key Pharmaceuticals.

The professional we are seeking will have an AA degree. BS preferred with 3 years minimum experience required as an analyst, project leader or manager in a manufacturing system environment. You will be responsible for implementation and maintenance of a state-of-the-art Closed Loop MRP package in an IBM mainframe environment. Responsibilities also include all MRP support for company's production departments. Strong communication skills necessary.

Selected as the Number One company in Florida, we offer enviable career opportunities in the pharmaceutical marketplace on excellent salary and benefits package and a chance ideal for professional advancement.

Please send resume with salary history to Neil Rowland, Personnel, Key Pharmaceuticals, INC., P.O. Box 693670, Miami, FL 33169. (Only those resumes including salary information will be considered.)

## Key Pharmaceuticals, Inc.

HIGH NEW PEOPLE  
CREATING NEW DOGS TO HEALTH.

Equal Opportunity Employer M/F

# SOFTWARE PROFESSIONALS

## SUCCESS IN THE SUN

TANO is making itself heard through a vehement mid-media hype. Over the last decade TANO CORPORATION has steadily built itself into a dynamic, innovative leader in the design, manufacture and marketing of computer-based systems for commercial and industrial applications.

In these key positions, you will join top professionals who will be given responsibilities for everything from requirements definition through system acceptance and test. This environment provides a unique setting which will foster your growth and professional well-being.

### REAL TIME

You will work in an environment consisting of VAX/VMS, PDP-11/02, IBM, MARY and GARDEN Systems. High caliber professionals will have the opportunity to apply their real time expertise within this state-of-the-art technical environment.

### COMPUTER SYSTEMS ANALYST

The primary responsibilities of this multifaceted position will focus on directing a project team to produce a customer system, assisting the sales and marketing departments with your technical knowledge, and acting as the primary interface between the software portion of the project and the rest of TANO.

The qualified professional will possess a minimum of 3-5 years of real time software experience. A degree in the computer sciences or in a related field is essential.

### SENIOR COMPUTER APPLICATIONS PROGRAMMER

Working with or deriving small project teams, you will be responsible for handling requirements which exceed standard capabilities, extensions of standard data types and custom systems of operating systems or hardware products. Create work breakdown summaries and schedules as well as analyze problems with customer systems.

Requires a degree in computer science or a related field, along with a minimum of one year of real time or systems software experience.

### SENIOR COMPUTER SYSTEMS PROGRAMMER

Key responsibilities will include analyzing customer specifications in terms of TANO standard systems. You will evaluate the technical performance of newly acquired/generated products or systems, and perform feasibility studies oriented towards technical capabilities, and assist technical personnel dealing with problems on product components, utilities or systems. You will also participate in such as design reviews and code walkthroughs and final small projects.

Requires a degree in computer science or a related field, along with a minimum of one year of real time or systems software experience.

### COMPUTER SYSTEMS PROGRAMMER

Responsibilities will include designing, programming, single components of software product systems, and preparing documentation for such computers, including user and technical manuals. Providing work estimates for assigned tasks and participating in design reviews and code walkthroughs will also come under your auspices.

This position requires a degree in Computer Science or a related field, or the equivalent combination of education and experience.

### TRAINING SPECIALIST (SOFTWARE)

The primary responsibilities of the Training Specialist (Software) are developing and presenting multi-media training courses to TANO customers and employees on IBM, PDP-11/02 and VAX/VMS software applications and systems. This includes assessing employee skills-training needs and analyzing customer contract specifications necessary for course development (some travel).

Requirements include appropriate computer science education and programming experience (3-5 years preferred).

TANO's continued growth affords new opportunities for software professionals. Make yourself heard! TANO offers an excellent benefits package, including 100% company paid medical insurance, incentive plan and pension trust. In addition to competitive salary, we think you'll find our enviable New Orleans lifestyle most enticing a professional, with its reasonable cost of living, unique blend of the traditional and modern as well as its recreational/cultural features for every taste.

Qualified professionals are urged to forward their resume, indicating position desired, including salary history and requirements to:

Personnel Department

**TANO CORPORATION**

4301 Poche Court West, Box A104 New Orleans, Louisiana 70129

Equal Opportunity Employer M/F

Please Print Name

### SYSTEMS ANALYST

We currently have positions open requiring those who have a BS degree in Computer Science, with 3 years of experience in systems analysis, good written and verbal communication skills, and the ability to interface with users. Job involves analysis of user requirements and determining what computer resources, equipment and software are needed to meet those needs. Analyzing and writing the development of computer systems in an IBM and/or non-IBM environment. Good oral and written communication skills. A plus is a degree in Computer Science or a related field. We are a national leader in the development of computer systems and the implementation of computer systems. We are a national leader in the development of computer systems and the implementation of computer systems. We are a national leader in the development of computer systems and the implementation of computer systems.

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Kansas City Life Insurance Company  
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### COMPUTER NETWORK PROTOCOLS

#### COMPUTER SCIENTISTS needed to:

- perform laboratory studies of high-level network protocols (distributed and satellite networks), computer-based office systems, protocols, and local area networks (LANs) and token access methods.
- participate in national and international technical committees to develop networking standards, and
- design protocols using finite state machine methods.

Desirable experience includes protocol design, implementation and testing, and understanding of operating system principles, use of high-level programming languages, and work with technical committees. An undergraduate degree in computer science or 30 semester hours in mathematics, statistics and computer science and related differential and integral calculus courses is required in addition to at least three (3) years of experience in the computer science field.

These positions range from the design to the implementation of computer systems, and require a high level of technical and professional skills. We are seeking individuals with qualifications and experience and offer competitive salary, excellent career level, and professional growth opportunities. Please send your personal qualifications resume (8-11) to:

U.S. Department of Commerce  
National Bureau of Standards  
Administration Building, Room A129  
Washington, D.C. 20234

ATTN: Mr. Joseph White (CW)  
The National Bureau of Standards is located in modern facilities in Gaithersburg, MD and is an Equal Opportunity/Affirmative Action Employer. U.S. citizenship is required.





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## WE'VE GOT YOUR NUMBERS...

- 55% annual growth the last 4 years!
- 17% salary increase for DP professionals!
- 99.6% CPU up-time in 1982.
- 4000 + financial users.

The company behind those numbers is FINANCIAL INSTITUTION SERVICES, a rapidly expanding leader in the systems service industry and certainly one of the best places for career oriented DP professionals to grow and grow fast! Our continued development of new products and services has created the following openings:

### MANAGER HELP CONTROL CENTER

Assume responsibility for our HOTLINE ESCALATION LOGGING PROGRAM, with a solid background/understanding of multi-CPU's (MVS SP-1). Must have familiarity with the operation of a master console in a CICS/VSAM environment. Knowledge of VSAM is a strong plus. Position provides liaison between our central and on-site customers (over 800 that utilize over 8000 remote terminals). Direct the activities of 3 coordinators.

### MANAGER RESOURCE PLANNING

Will head up state-of-the-art department, QCM, RHP and SMF, proficiency in computer languages, modeling/queue theory and MVS, impact forecasting, measure CPU hardware.

### DASD ANALYST #

Must have working knowledge of VSAM and advanced knowledge of IBM OS/CL and utilities. Position requires excellent and effective communication skills to ensure the integrity of all production disc files and libraries. You should be adept at designing, implementing and maintaining operating procedures to keep adequate disc space and production files available.

Based in Omaha, one of the Midwest's most attractive cities, FIS offers highly competitive salaries, an exceptional benefits program, and unique opportunities for advancement in a fast-paced career environment. For prompt consideration send a resume with salary history, or call TOLL FREE:

Roger Stiles  
1-800-225-0979

### FINANCIAL INSTITUTIONAL SERVICES

7301 Pacific St.  
Omaha, Nebraska 68114

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## SYSTEMS MANAGER

who has a DP environment large enough to be state-of-the-art and small enough for high visibility? The folks who do it right!

And, the folks who do it right, Kentucky Fried Chicken, want you to find out about the varied projects, room for creativity and the chance to learn and grow within a growing department. We require an experienced candidate with 10 years' background in programming, systems design and management of application systems projects to assume the responsibility of Systems Manager / Corporate Data Systems.

Reporting directly to the Director/MIS Systems Development, you will be responsible for recommending, planning, organizing and controlling assigned resources to develop, maintain and enhance automated and manual systems, supporting such areas as finance, legal, real estate/construction, franchising, research and development, and others. Proven managerial abilities are required. An MBA a plus. Fast food or multi-unit operations experience preferred. Ability to effectively interface with user departments simultaneously is essential.

We offer an excellent salary, comprehensive benefits program and a professional environment. For further information, please send your resume, stating background, salary history and requirements, to: Ms. Kathleen Brittain, Employment Specialist, Kentucky Fried Chicken, P.O. Box 32070, Department 444C, Louisville, KY 40232. We are an equal opportunity employer M/F.



**Kentucky  
Fried  
Chicken.**

## SENIOR MIS PROFESSIONALS

Digital is looking for people who can communicate ideas. And who have ideas to communicate.

Digital Equipment Corporation, the world's largest computer company with over 200 offices worldwide, is looking for Senior MIS pros to work in the Digital Technical Office (DTO) of Digital Information Systems (DIS). DTO designs, develops and introduces new generations of hardware to Digital's internal MIS groups, and we need people capable of working both with highly technical engineering groups and business-oriented MIS groups.

Join us and you'll work in state-of-the-art facilities. You'll also enjoy a fully competitive salary, generous benefits including tuition reimbursement, and the exceptional growth opportunities offered by a \$4.3 billion company.

### Transaction Processing Consultant

You will identify the technology necessary to reduce the complexity and effort required to develop state-of-the-art information systems. You will serve as liaison, organizing and presenting information between software engineering and MIS groups. You will learn, plan and introduce new products, and evaluate advanced research and development through hands-on testing. Primary products include Dataserve, FMS, TDMS, ACMS and other new products.

You should be experienced in VAX Information Architecture, advanced Dataserve development, FMS, FMS and 3rd Generation language.

### Data Resource Management Consultant

You will provide DIS with tools to allow data modeling, maintain a data dictionary and provide for common data definition and validation across VAX Information Architecture products. You will reduce system development effort and complexity, and provide DIS with more accessible data. You will provide technical leadership for the DIS Data Resource Management effort. And you will work with DIS and software engineering groups to define the requirements for integrating active data management and modeling into the next phase of VAX Information Architecture products.

You should have hands-on experience with Dataserve, VAX-11 Common Data Dictionary (CDD), FMS and TDMS. You should have an understanding of data resource management or modeling.

### DIS Technical Consultant

You will develop and maintain a broad understanding of information system technologies, prepare analyses, make recommendations to DIS management and give technical advice regarding state-of-the-art concepts. You will develop and implement a personal workshop to produce results in line with DTO goals, and prepare and deliver presentations to DIS groups and you will interact with MIS managers, DTO management team, engineers and technology sources in university and industry, and you may also manage technical projects composed of resources inside and outside DTO.

You should be proficient in programming, systems analysis, telecommunication office systems and data management. You should have a high level of project management skills and be able to influence other without having direct operational control over them.

Please address all responses to Renita Lawrence, Digital Equipment Corporation, 111 Powdermill Road, MSO/DO, Dept. 0905 3804, Maynard, MA 01754.

We are an affirmative action employer.

digital

### SYS. CONSULTANT

Hi-energy MIS indie sought by top notch IBM OS/VS/VS/VS MIS DB/DC firm w/its env. to existing clients to act as internal consult. coord. w/vendors, eval. pgs. & interfaces, tech support. Long term career growth. \$37,000/yr Paid.

Robert Huff of Boston, Inc.



100 Summer Street  
Boston, MA 02110  
(617) 493-1300  
Permanent Consultants

### COMPUTER PROGRAMMER

Optimum General Hospital has an opening for a Computer Programmer who may serve as the Manager of the Data Processing Department.

The successful candidate will be familiar with IBM's System 38 and possess 1 year RPG II programming experience. Interested individuals should mail their resumes to:



Optimum General Hospital  
Attn: Human Resources  
P.O. Box 1348  
Optimum, LA 70079

FLUOROPOLYMER SYSTEMS, INC., located in metropolitan Portland, Oregon, is the leader in the design and manufacture of many processors.

## Technical Writers

We have challenging opportunities in new technology for experienced hardware writers to produce sophisticated digital logic and systems manuals. Prefer degree in Electrical/Computer Engineering (or equivalent), or engineering/service experience.

If you are interested in joining one of the best in the computer industry and would enjoy the clean, green beauty of the Pacific Northwest, this is your opportunity. For immediate consideration, call BOB CLAY at 1-800-647-8427 or send your resume and salary history to FLUOROPOLYMER SYSTEMS, INC., P.O. BOX 23449 CW-17, PORTLAND, OR 97223.



**FLUOROPOLYMER  
SYSTEMS, INC.**

We are an equal opportunity employer.

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## position announcements

## position announcements

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Don't Miss

## OPERATING SYSTEMS SPECIALISTS

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Request for Proposal Number 844, due Wednesday, September 21, 1983, 3:30 P.M. for the upgrade of a Data Phase 1655 distributed processing minicomputer for the Mississippi Department of Natural Resources.

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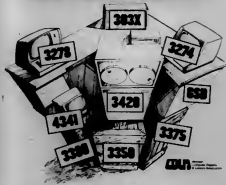
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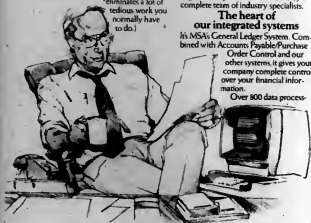
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**2. Are your systems just record keepers, or can they really help us make decisions?**

Can we pull together information from all of our integrated systems? In exactly the form we want it?

**3. Can you provide business software for both mainframe and microcomputer?**

Do you develop this software yourself or do you simply market it for another company?

**4. Are your systems truly online current? Is all of our information in current?**

How many of your systems are online? How secure are they?

**5. Will any company have to be the one that discovers the bugs in your brand new system?**

Just how long have your systems actually been used, and how have they been tried?

**6. Will you update your systems as technology advances and regulations change?**

What are some of your most recent updates? Will you keep us current on regulatory changes?

**7. Do your systems really do everything you say they will?**

Or will we have to change them or add to them to get the features we want?

**8. How long have you been in business?**

What are your revenues? What is your growth record? Where will your company be five years from now?

**9. How many systems has your company installed?**

How many of these were installed in the past six months? How many of your earlier customers are still using—and liking—your systems?

**10. Do your financial systems handle unlimited foreign currencies?**

Do your financial systems use a common set of currency exchange rates?

**11. Can you link our existing "civic" computers directly to the mainframe—so they can get their own information?**

Is that software available right now?

**12. How will you make sure our own people thoroughly understand your system?**

Do you have educational centers near us, or will we have to travel all the way across the country to find one? Will you be there to help during installation and after?

**13. How many of your people specialize in software for my industry?**

How many accountants work for you? Human resource specialists? Manufacturing experts?

**14. Do your systems have built-in features that make them easier to use?**

What happens if someone needs help figuring out a feature? Do you have online documentation that's easy to understand?

**15. As my business changes, how will your system be flexible enough to change with it?**

Or will we have to pay a lot to rewrap it? Or even regenerate it?

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